FRP Content Requirements

EPA FRP Short Course, Module 2

WITT O'BRIENS Compliance Workshop

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EPA Office of Emergency Management

Module Topics

- Required Plan elements, Appendix F
- Revised PREP guidelines
- Actions by EPA upon Plan submittal
- Plan holder maintenance
- Supplementary material on underflow dams

Required Plan Elements

Oil Pollution Act of 1990 and Clean Water Act

- Section *311(j)(5)(D)* of Clean Water Act (CWA), as amended by OPA 1990
- A Facility Response Plan shall:
  - (i) be consistent with the requirements of the NCP and ACP(s)
  - (ii) identify the qualified individual having full authority to implement removal actions, and require immediate communications between that individual and the appropriate Federal official and the persons providing personnel and equipment pursuant to clause (iii)

Oil Pollution Act of 1990 and Clean Water Act *(continued)*

– (iii) identify, and ensure by contract or other means approved by the President the availability of, private personnel and equipment necessary to remove to the maximum extent practicable a worst case discharge (including a discharge resulting from fire or explosion), and to mitigate or prevent a substantial threat of such a discharge

Oil Pollution Act of 1990 and Clean Water Act *(continued)*

- (iv) describe the training, equipment testing, *periodic unannounced drills*, and response actions of persons on the vessel or at the facility, to be carried out under the plan to ensure the safety of the vessel or facility and to mitigate or prevent the discharge, or the substantial threat of a discharge
- (v) be updated periodically
- (vi) be resubmitted for approval of each significant change

Consistency with NCP and ACPs

- FRP shall be consistent with ACP (and NCP)
  - "All facility response plans shall be consistent with the requirements of the National Oil and Hazardous Substance Pollution Contingency Plan (40 CFR part 300) and applicable Area Contingency Plans prepared pursuant to section 311(j)(4) of the Clean Water Act […]" *[§112.20(g)(1)]*
  - "The owner or operator shall review relevant portions of the [NCP] and applicable [ACP] **annually** and, if necessary, revise the facility response plan to ensure consistency with these plans […]" *[§112.20(g)(2)]*

Consistency with NCP and ACPs
(continued)

- Key consistency elements:
  - Approval for use of chemical agents (dispersants); *not allowed for inland facilities*
  - Resources at risk and priority areas for protection
  - Notification requirements and contacts
  - Roles and responsibilities of responders
  - Overall response strategy and local response strategies outlined in the ACP
  - Disposal plan

FRP Format Requirements

- Response plan shall follow the format of the model plan included in 40 CFR 112, Appendix F,
  - … unless the owner/operator has prepared a plan acceptable to the Regional Administrator (RA) to meet state or other federal requirements *[§112.20(h)]*
  - Response plan that does not follow the specified format in Appendix F shall have an emergency response action plan and be supplemented with a cross-reference section *[§112.20(h)]*

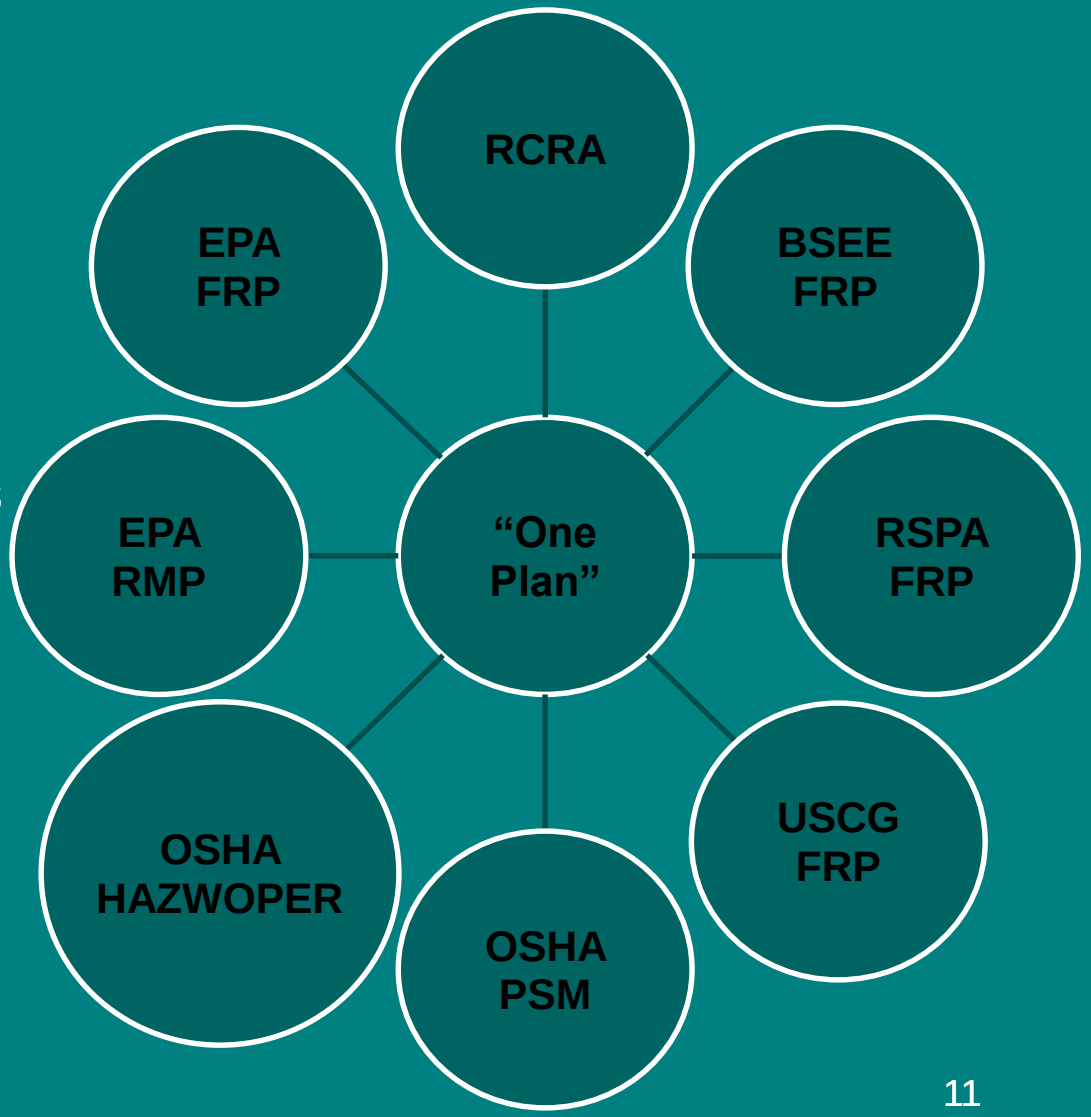
FRP Format

[§112.20(h) and Appendix F]

PLAN SECTION	
1	Emergency Response Action Plan
2	Facility Information
3	Information about Emergency Response
4	Hazard Evaluation
5	Response Planning Levels
6	Discharge Detection Systems
7	Plan Implementation
8	Self-Inspection, Drills/Exercises, and Response Training
9	Diagrams
10	Security Systems
11	Response Plan Cover Sheet

Alternate Formats

- Integrated Contingency Plan (ICP)
- ICP guidance includes:
  - Plan outline or table of contents with suggested structure
  - Matrices with cross-references to specific regulatory requirements
- Plan shall include cross-reference to requirements of 40 CFR 112.20 and 112.21
- Plan shall include ERAP



FR# 61:28641-28664

1.1 Emergency Response Action Plan (ERAP)

ERAP Components

- Qualified individual (QI) information *[§1.2 partial]*
- Emergency notification phone list *[§1.3.1 partial]*
- Spill response notification form *[§1.3.1 partial]*
- Response equipment list and location *[§1.3.2 complete]*
- Response equipment testing and deployment *[§1.3.3 complete]*
- Facility response team *[§1.3.4 partial]*
- Evacuation plan *[§1.3.5 condensed]*
- Immediate response actions *[§1.7.1 complete]*
- Facility diagram *[§1.9 complete]*

§112.20(h)(1)
Appendix F, Section 1.1

ERAP Requirement

- The response plan shall include an ERAP
- Located in front of FRP or a stand-alone document
- Can be a separate document accompanying the FRP
- Designed for easy access of key information for use during an emergency or oil discharge

§112.20(h)(1)
Appendix F, Section 1.1

ERAP Required Information

- QI information *[App. F, Section 1.2 partial]*
  - Identify QI and their phone number
  - Full authority to implement the plan
  - Contracting authority
  - Representative of the facility to agencies and media

§112.20(h)(1)
Appendix F, Section 1.1

ERAP

- Emergency notification phone list *[App. F, Sec. 1.3.1 partial]*
  - Includes NRC and other agency notifications
  - Facility response personnel
  - OSRO

- Spill response notification form *[App. F, Sec. 1.3.1 partial]*
  - Checklist of information to provide NRC
  - Spill notification must not be delayed to collect the information on the list

§112.20(h)(1)
Appendix F, Section 1.1

ERAP

- Response equipment list and location *[App. F, Sec. 1.3.2 complete]*
  - Description of facility equipment and location
  - Includes:
    - Skimmers/pumps
    - Boom
    - Sorbents
    - Hand tools
    - Communications equipment
    - Dispersant dispensing equipment
    - Chemicals stored (dispersants listed on NCP product schedule)
    - Fire fighting and personal protective equipment
    - Other (heavy equipment, boats and motors, etc.)
  - Response equipment testing and deployment *[App. F, Sec. 1.3.3. complete]*

§112.20(h)(1)
Appendix F, Section 1.1

ERAP

- Facility response team *[App. F, Sec. 1.3.4 partial]*
  - Duties
  - Response times
  - Capabilities
  - Qualification
- Evacuation plan *[App. F, Sec. 1.3.5 condensed]*
  - Reference to community evacuation consistent with local emergency planning committees
  - Evacuation map

§112.20(h)(1)
Appendix F, Section 1.1

ERAP

- Immediate actions *[App. F, Sec. 1.7.1 complete]*
  - Immediate actions to secure source of discharge: stop the product flow, warn personnel, shut-off ignition sources, initiate containment, Notify NRC and FOSC
  - Emergency plans for spill response
  - Additional response training qualification
  - Additional contracted help
  - Access to additional response equipment/experts
  - Ability to implement the plan including response training and practice drills

§112.20(h)(1)
Appendix F, Section 1.1

ERAP

- Facility diagram *[App. F, Sec. 1.9 complete]*
  - Site plan diagram
    - Above ground storage tanks/Underground storage tanks with contents and capacities
    - Secondary containment systems, including containment capacities
    - Contents and capacities of surface impoundments and drum oil storage areas
    - Location of communication and emergency response equipment
  - Site drainage diagram
    - Sanitary and storm sewers
    - Surface water and receiving streams
    - Direction of discharge flow
    - Response personnel ingress and egress routes
  - Site evacuation plan diagram
    - Evacuation routes
    - Location of evacuation regrouping areas

§112.20(h)(1)
Appendix F, Section 1.1

1.2 Facility Information

Facility Information

- Provides an overview of the site and operations
- See “Facility Information Form” in Appendix F
- Covers:
  - Type and location of facility
    - Street address, latitude and longitude, whether located in a wellhead protection area
  - Identity and tenure of current owner and operator
    - Street address of owner, if the two are different
  - Identity of QI at the facility
    - Name, position, work and *home address* and emergency phone number
  - Operational history
    - Date of oil storage start-up
    - Dates and types of substantial expansions
    - Description of current operations

§112.20(h)(2)
Appendix F, Sec 1.2

1.3 Emergency Response Information

Emergency Response Information

- Emergency notification phone list
- Spill response notification form
- Provide description of facility's:
  - List of emergency equipment
    - Location
    - Capabilities
    - Launching sites
- Facility-owned equipment:
  - Equipment testing and deployment exercises to ensure
    - Operational
    - Personnel capability with the equipment
    - Semiannual equipment deployment for facility-owned equipment
    - Follow National Preparedness for Response Exercise Program (PREP)
- OSRO dependent:
  - Evidence of annual equipment deployment exercises by OSRO
  - Evidence of contract/agreement

§112.20(h)(3)
Appendix F, Sec 1.3

Emergency Response Information

Facility response personnel and OSRO:

- Three forms required
  - Emergency response personnel
  - Emergency response contractors
  - Facility response team
    - Response time
    - Contact information
    - Response roles and responsibilities
    - Training level
    - Evidence of contract

§112.20(h)(3)
Appendix F, Sec 1.3

Emergency Response Information

- Evacuation Plan
  - List factors to be considered
    - Location of stored materials
    - Hazards imposed by discharged material
    - Discharge flow direction
    - Prevailing wind direction and speed
    - Water currents, tides or wave conditions
    - Arrival routes of emergency personnel and response equipment

§112.20(h)(3)
Appendix F, Sec 1.3

Emergency Response Information

- List factors to be considered *(continued)*
  - Evacuation routes and alternate evacuation routes
  - Transportation route of injured personnel
  - Location of alarm/notification systems
  - The need for a centralized check-in area for evacuation validation
  - Selection of a mitigation command center
  - Location of shelter at the facility as an alternative to evacuation
  - Reference existing community evacuation plans

§112.20(h)(3)
Appendix F, Sec 1.3

Emergency Response Information

QI duties and responsibilities:

- Activate internal alarms and haz comm systems to notify facility personnel
- Notify all response personnel, as needed
- Identify the character, exact source, amount, and extent of the release, as well as the other items needed for notification.
- Notify and provide necessary information to Fed, state and local authorities
- Assess the interaction of the discharged substance with water and/or other substances stored at the facility; notify response personnel at the scene
- Assess possible hazards to human health and the environment
- Assess and implement prompt removal actions to contain and remove the substance released
- Coordinate rescue and response actions
- Have authority to immediately access company funding to initiate response actions
- Direct cleanup activities until relieved

§112.20(h)(3)(ix)
Appendix F, Sec 1.3

1.4 FRP Hazard Evaluation

Hazard Identification

- Requires observation of conditions under which oil is used, processed, produced, or stored
- Document location of tanks and surface impoundments

Hazard Identification Tanks					
Tank No.	Substance Stored (Oil/HS)	Quantity Stored (gallons)	Tank Type/Year	Max. Capacity (gallons)	Failure/ Cause

Hazard Identification Surface Impoundments					
SI No.	Substance Stored	Quantity Stored (gallons)	Surface Area/Year	Max. Capacity (gallons)	Failure/ Cause

§112.20(h)(4)
Appendix F, Sec 1.4

Hazard Identification

FRP rule requires the following:

- Appendix F, Section 1.3 Emergency Response Information (A) The information in this section shall describe what will be needed in an actual emergency involving the discharge of oil or *a combination of hazardous substances and oil discharge.*
- List of tanks storing CWA hazardous substances (40 CFR 112, Appendix F, Section 1.4.1)
- Describe the operations at the facility that risk the discharge of oil or release of CWA HS during transport processes, such as loading and unloading of trucks, railroad cars, or vessels. (40 CFR 112, Appendix F, Section 1.4.1 (5)(a))
- Describe the day-to-day operations that may present a risk of discharging oil or releasing a HS, such as pipe repairs, valve maintenance, and tank-to-tank transfers. (40 CFR 112, Appendix F, Section 1.4.1 (5)(b))

§112.20(h)(4)
Appendix F, Sec 1.4

Hazard Identification

- Develop schematic drawing
  - Label using numbers from the tank and surface impoundment (SI) forms
  - Identical to schematic drawing in SPCC plan
- Describe facility operations
  - Loading/unloading of transportation vehicles (trucks, railroad cars, vessels, etc.)
  - Activities such as scheduled venting, piping repair or valve maintenance, repair or replacement
  - Material involved in transfer operations
  - Secondary containment volume associated with bulk storage containers and transfer points
  - Normal daily throughput and impacts of changes in throughput

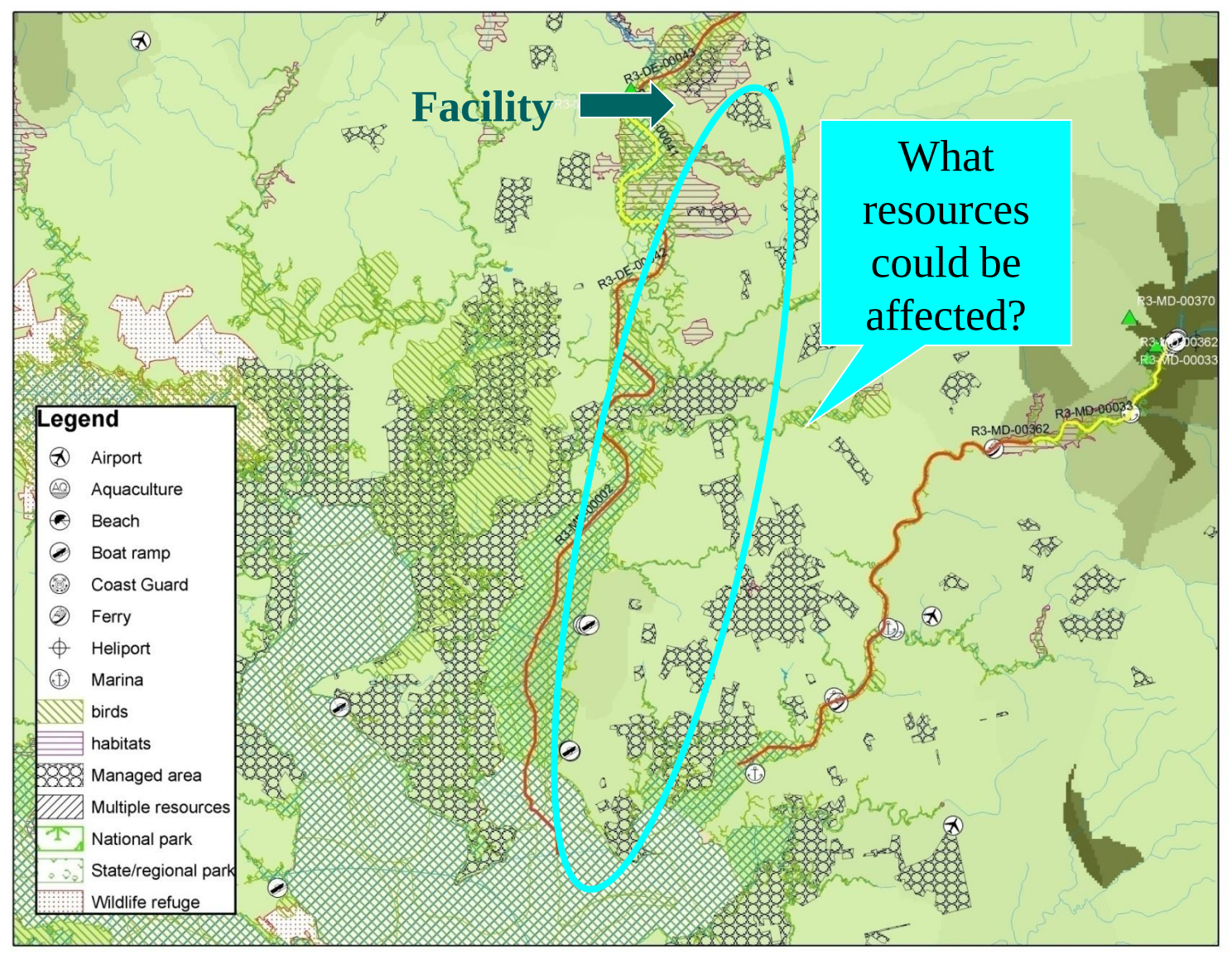
§112.20(h)(4)
Appendix F, Sec 1.4

Vulnerability Analysis

- Addresses the potential effects of an oil spill (to human health, property, or the environment)
- Using planning distance, identify the following areas within the trajectory of a discharge and discuss the vulnerability of each:
  - Water intakes
  - School & medical facilities
  - Residential areas & businesses
  - Wetlands & other sensitive environments
  - Fish & wildlife areas
  - Lakes and streams
  - Endangered flora & fauna
  - Transportation routes
  - Utilities
  - Recreational parks (e.g. public parks)
  - Other areas of economic importance

§112.20(h)(4)
Appendix F, Sec 1.4

Role of Planning Distance



Other Areas of Concern: At RA Discretion

- Examples
  - Agricultural/irrigation intakes
  - Aquaculture areas
  - Power plant cooling water intakes
  - Manufacturing water intakes
  - Concentrations of human populations
  - Areas of special environmental or economic importance where spills might cause disruption and impose undue costs to communities
- Refer to the Area Contingency Plan and/or ESI maps for a list/map of areas of concern

Analyze Potential for an Oil Spill

- Discusses the probability of oil spills occurring at the facility, considering historical accident data, as documented in the FRP *[§1.4.3]*

§112.20(h)(4)
Appendix F, Sec 1.4

Analyze Potential for an Oil Spill

- Considerations:
  - Range of potential discharges
  - Vulnerability to natural disasters
    - Earthquakes
    - Floods
    - Hurricanes
  - Industry records
  - Uses of oil at the facility
  - Tank age and maintenance

§112.20(h)(4)
Appendix F, Sec 1.4

NOAA Resources

https://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/response-tools/response-tools-oil-spills.html

Chemical Spills | response.rest... | Response Tools for Oil Spills...

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Response Tools for Oil Spills

Oil Spill Response/Planning | Chemical Spill Response/Planning

Here is a quick guide to many of the most commonly used tools and resources that NOAA OR&R offers for oil spill responders and planners. General emergency responders may also want to refer to the quick list of tools and resources for chemical spill response.

Software and Datasets

- GNOME suite and related programs:
  - Desktop GNOME, a trajectory model that predicts the possible route pollutants might follow on the water's surface.
  - WebGNOME, our online interface of GNOME, in beta state.
  - PyGNOME, a scripting interface for automation and batch processing.
  - GOODS, a tool that helps GNOME users access base maps, ocean currents, and winds.
  - ADIOS, an oil weathering model.
  - Trajectory Analysis Planner (TAP), oil spill contingency planning software.
  - NUCOS, a unit converter that includes units unique to oil spill response.
- ERMA, the online mapping tool for environmental response data, adapted to a variety of regions.
- Environmental Sensitivity Index (ESI) maps and data, concise summaries of coastal resources that may be at risk in a spill incident.
- CAFE Database, a program to help responders in their assessment of environmental impacts from oil or chemical spills into an aquatic environment.
- Response System Planning Tools, tools to assess system performance of oil spill response methods, including mechanical recovery of oil, dispersant application, and in situ burning of oil.

NOAA develops a number of emergency response and planning tools for dealing with oil and chemical spills.

Publications, Training, and Other Resources

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Hazard Evaluation
Reportable Oil Spill History

- Facility must briefly describe the oil spill history for the entire life of the facility *[Section 1.4.4],* including:
  - Date of the discharge
  - List of discharge causes
  - Materials discharged
  - Amount discharged in gallons
  - Amount of discharge that reached navigable waters (if applicable)
  - Effectiveness and capacity of secondary containment
  - Cleanup actions taken

§112.20(h)(4)
Appendix F, Sec 1.4

Hazard Evaluation
Reportable Oil Spill History *(continued)*

- Steps taken to reduce possibility of recurrence
- Total oil storage capacity of the tanks or impoundments from which the material discharged
- Enforcement actions
- Effectiveness of monitoring equipment
- Description of how the discharge was detected

§112.20(h)(4)
Appendix F, Sec 1.4

1.5 Discharge Scenarios

Response Planning Levels

- Discuss specific planning scenarios for:
  - Small discharge
  - Medium discharge
  - Worst case discharge

- For complexes (regulated under OPA 90 by more than one agency), planning quantities must be the larger of the amounts calculated for each component of the facility

§112.20(h)(5)
Appendix F, Sec 1.5

Response Planning Levels
Small and Medium Discharges

- Small discharge: 2,100 gallons or less
- Medium discharge:
  - Greater than 2,100 gallons, BUT
  - Less than or equal to 36,000 gallons or 10 percent of the largest tank at the facility, whichever is less
  - USCG, maximum most probable: 1,200 bbls or 50,400 gallons (App. E, Section 4.2.1)
- Describe spill scenarios that could contribute to a small or medium discharge, e.g.:
  - Loading/unloading
  - Facility maintenance
  - Facility piping
  - Pumping stations and pumps
  - Age and condition of facility and components
  - Vehicle refueling
  - Oil storage tanks

§112.20(h)(5)
Appendix F, Sec 1.5

Response Planning Levels
Small and Medium Discharges

- Scenarios shall also consider the following factors:
  - Size of discharge
  - Proximity to down gradient wells, waterways, and drinking water intakes
  - Proximity to fish and wildlife and sensitive areas
  - Likelihood that discharge will flow offsite
  - Location of the material discharged (concrete/soil)
  - Material discharged
  - Weather and aquatic conditions
  - Available remediation equipment
  - Probability of a chain reaction of failures
  - Direction of discharge pathway

§112.20(h)(5)
Appendix F, Sec 1.5

Response Planning Levels
Worst Case Discharge (WCD)

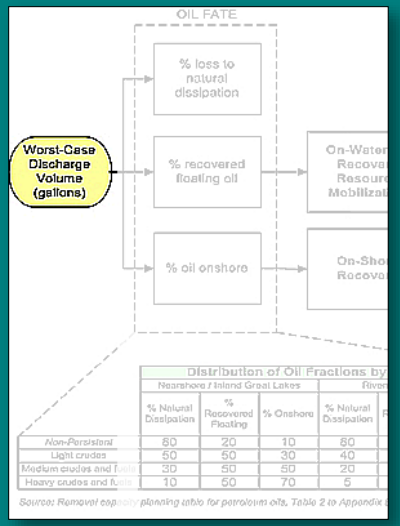
- Identify WCD volume by using Appendix D calculation worksheet for production and non-production
- The same factors considered for small and medium will be used for WCD (see previous slides)
- For a complex facility, use the largest quantity of amount calculated for each component

§112.20(h)(5)
Appendix F, Sec 1.5

Response Planning Levels

Worst Case Discharge (WCD)

- Facility owner/operator determines WCD volume



- Appendix D includes worksheets to calculate volume based on type of facility and number of tanks
  - Bulk storage facilities
    - Calculate based on single or multiple tanks
  - Oil production facilities
    - Calculate based on single or multiple tanks, and
    - Type of well: pumping or under pressure/exploratory

- Regional Administrator (RA) may specify a different discharge amount to be used for response planning if Region determines that the WCD calculated by the facility is not appropriate.

[Appendix D, Part A]

Response Planning Levels

WCD Calculation *(continued)*

Onshore Storage Facilities with a Single Tank

If tank has *adequate* secondary containment:

WCD = tank capacity * 0.8

A.1 SINGLE-TANK FACILITIES

For facilities containing only one aboveground oil storage tank, the worst case discharge planning volume equals the capacity of the oil storage tank. If adequate secondary containment (sufficiently large to contain the capacity of the aboveground oil storage tank plus sufficient freeboard to allow for precipitation) exists for the oil storage tank, multiply the capacity of the tank by 0.8.

(1) FINAL WORST CASE VOLUME: _____ GAL

(2) Do not proceed further.

If tank has *inadequate* secondary containment:

WCD = tank capacity

[Appendix D, Part A.1]

Response Planning Levels

WCD Calculation *(continued)*

Onshore Storage Facilities with Multiple Tanks

If all aboveground storage tanks (ASTs) have *adequate* secondary containment:	If all ASTs have *inadequate* secondary containment:
WCD = capacity of largest AST	***WCD = total capacity of all ASTs***

If one or more AST(s) without adequate secondary containment: *WCD* = total capacity of all ASTs without adequate secondary containment + capacity of largest AST within adequate secondary containment

Note: permanently manifolded tanks are calculated as one tank

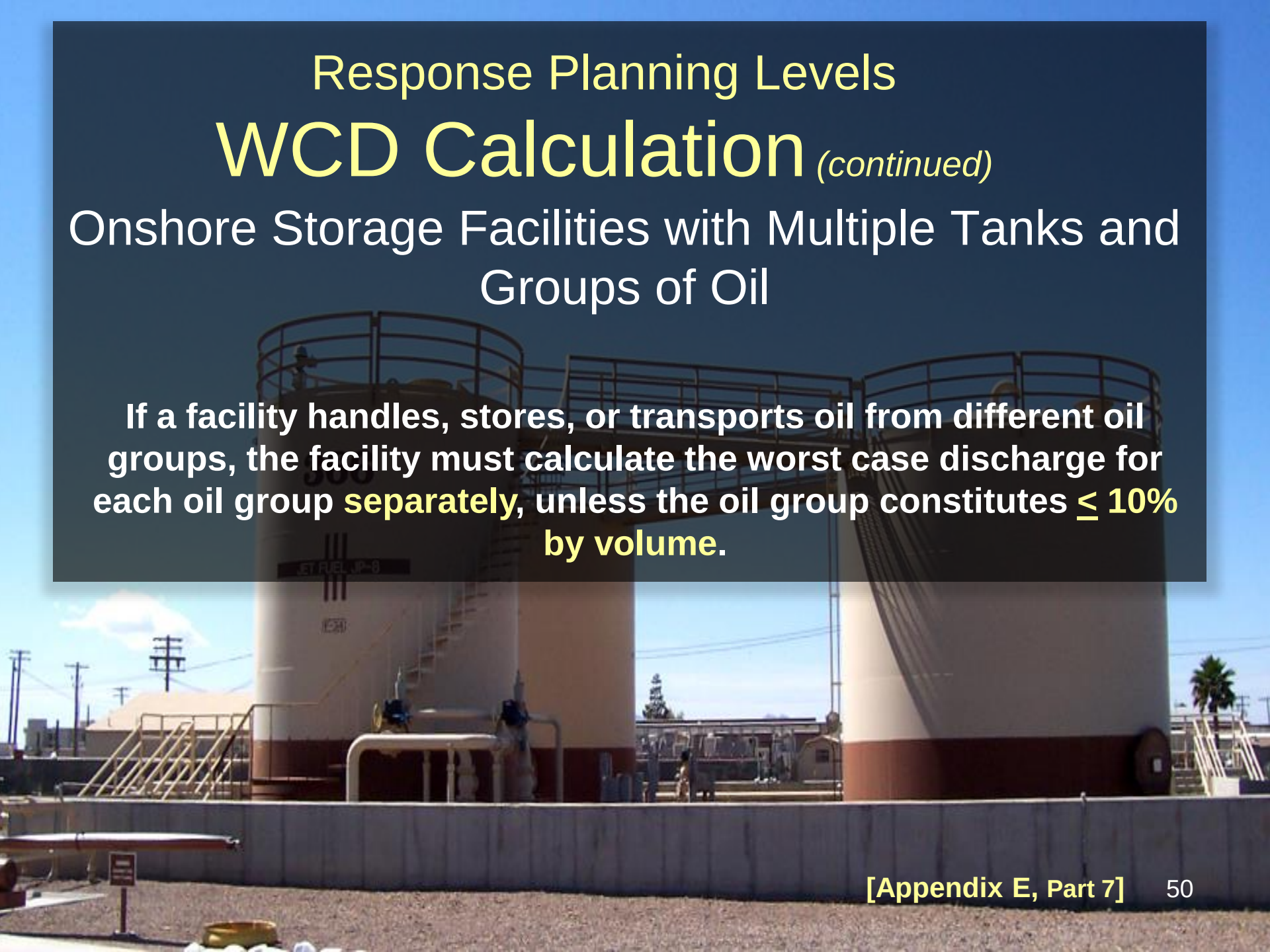
[Appendix D, Part A.2]

Response Planning Levels

WCD Calculation *(continued)*

Onshore Storage Facilities with Multiple Tanks and Groups of Oil

If a facility handles, stores, or transports oil from different oil groups, the facility must calculate the worst case discharge for each oil group separately, unless the oil group constitutes ≤ 10% by volume.



[Appendix E, Part 7]

Response Planning Levels
Example Onshore Facility-Adequate Secondary Containment and WCD

Tank No.	Tank Type	Contents / Capacity (gal)	Containment Capacity (gal)	Containment	Oil Group
ABOVEGROUND STORAGE TANKS					
A-1	Steel IFR	Gasoline / 2,500,000	3,750,000	Concrete berm	1
A-2	Steel IFR	Gasoline / 2,500,000	3,750,000	Concrete berm	1
A-3	Steel IFR	Diesel / 1,500,000	2,100,000	Concrete berm	2
A-4	Steel IFR	Diesel / 1,200,000			
A-5	Steel IFR	Kerosene / 1,200,000	1,800,000	Concrete berm	1
A-6	Steel FR	Boiler Fuel / 750,000	1,900,000	Lined earth berm	4
A-7	Steel FR	Heating Oil / 1,500,000			2
A-8	Steel FR	Lubricating Oil / 1,000,000			3
A-9	Steel HC	Gasoline / 5,000	6,000	Concrete dike	1
A-10	Steel HC	Diesel / 5,000	> 5,000	DW	2

DW- Double-Walled FR- Fixed Roof HC- Horizontal Cylindrical IFR- Internal Floating Roof

Response Planning Levels
Example Onshore Facility-Adequate Secondary Containment and WCD *(continued)*

What are the small, medium and worst case discharge planning volumes for this hypothetical facility?

Oil Group	Total Storage Capacity (gallons)	% of Total Facility Storage Capacity, 12,160,000 gallons
1 (gasoline/kerosene)	6,205,000	51
2 (diesel/heating oil)	4,205,000	35
3 (lube oil)	1,000,000	8
4 (boiler fuel)	750,000	6

The facility must calculate the worst case discharge for each oil group separately, unless the oil group constitutes ≤ 10% by volume.

Response Planning Levels
Example Onshore Facility-Adequate Secondary Containment and WCD *(continued)*

- Worst case discharge planning volume, Group 1 oil (gasoline/kerosene)
  - Volume without adequate secondary containment = 0 gallons
  - Largest tank volume: 2,500,000 gallons
  - Final Worst Case Discharge Volume: 2,500,000 gallons
- Medium discharge planning volume, Group 1 oil
  - 10% of WCD = 250,000 gallons
  - > 36,000 gallons
  - Final Medium Discharge Volume: 36,000 gallons
- Small discharge planning volume, Group 1 oil: ≤ 2,100 gallons
  - Final Small Discharge Volume: ≤ 2,100 gallons

Response Planning Levels
Example Onshore Facility-Adequate Secondary Containment and WCD *(continued)*

- Worst case discharge planning volume, Group 2 oil (diesel/heating oil)
  - Volume without adequate secondary containment = 0 gallons
  - Largest tank volume: 1,500,000 gallons
  - Final Worst Case Discharge Volume: 1,500,000 gallons
- Medium discharge planning volume, Group 2 oil
  - 10% of WCD = 150,000 gallons
  - > 36,000 gallons
  - Final Medium Discharge Volume: 36,000 gallons
- Small discharge planning volume, Group 2 oil: ≤ 2,100 gallons
  - Final Small Discharge Volume: ≤ 2,100 gallons

Response Planning Levels
Example Onshore Facility-Adequate Secondary Containment and WCD *(continued)*

Response Planning Level	All Tanks in Adequate Secondary Containment
Small	≤ 2,100 gallons/ 50 barrels
Medium	36,000 gallons/ 857 barrels
Group 1 Oil WCD	2,500,000 gallons/ 59,524 barrels
Group 2 Oil WCD	1,500,000 gallons/ 35,714 barrels

1.6 Discharge Detection Systems

Discharge Detection Systems

Detailed description of procedures and equipment used to detect discharges

- Spill detection by personnel (inspections and initial actions)
- Automated spill detection (reliability of alarms, etc.)

§112.20(h)(6)
Appendix F, Sec 1.6

Discharge Detection Systems

Discharge detection by personnel *[App. F, Sec. 1.6.1]*

- Procedures and personnel that will detect any discharge
- Discussion of facility inspection
- Description of initial response actions

Automated discharge detection *[App. F, Sec. 1.6.2]*

- Discussion of automated discharge detection equipment (overfill alarms, secondary containment sensors, etc.)
- Procedures to verify alarms, and actions once verified

§112.20(h)(6)
Appendix F, Sec 1.6

1.7 Plan Implementation

Plan Implementation

- The plan shall explain in detail how to implement the emergency plan by the following response actions:
  - Ensure safety of the facility
  - Mitigate or prevent discharge
  - Identify response resources for small, medium, and WCD
  - Define disposal plan
  - Containment
  - Drainage planning
  - Identify personnel involved in cleanup
  - Define procedure to be used
  - Define timeframe to update
    - Review
    - After an actual incident

§112.20(h)(7)
Appendix F, Sec 1.7

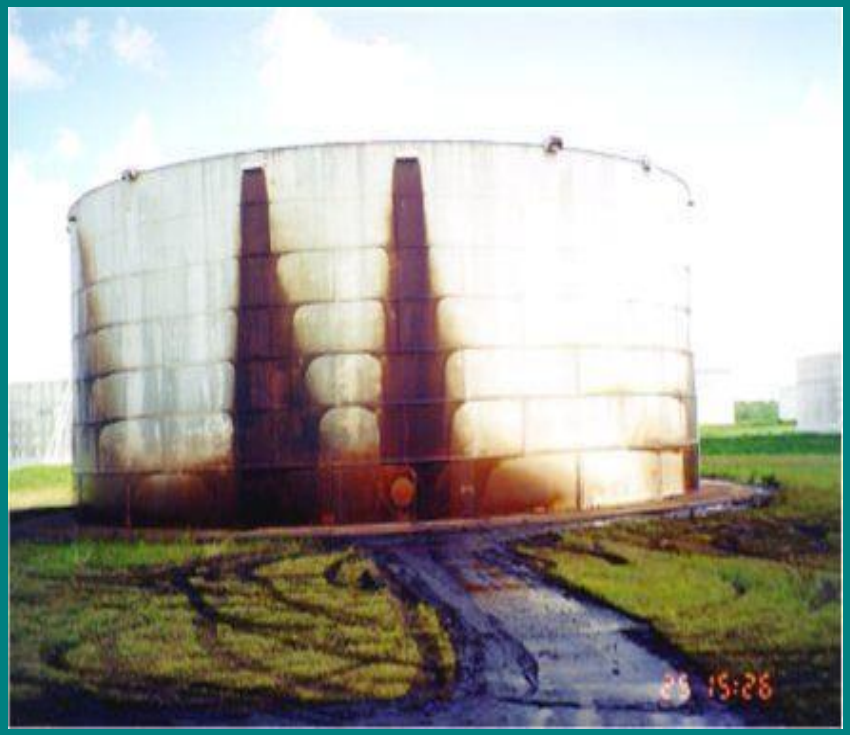
Plan Implementation

- Must demonstrate accessibility/effectiveness
  - Personnel
  - Equipment
- *Determine and demonstrate adequate response capability (use Appendix E)*
- Discuss how to expedite the cleanup
- Additional:
  - Response training
  - Contract help
  - Access additional response equipment and experts

§112.20(h)(7)
Appendix F, Sec 1.7

Plan Implementation

- Demonstrate ability to implement the plan including:
  - Training
  - Practice drills
  - PREP requirements
- List immediate actions
  - Stop sources
  - Warn personnel
  - Shut off ignition
  - Initiate containment
  - Notify:
    - NRC
    - OSC
    - Other agencies



§112.20(h)(7)
Appendix F, Sec 1.7

Response Planning Levels

- Required discussion of specific planning scenarios
- Multi-level planning approach
  - Response is quantitatively different depending on quantity of discharge
  - Potential direction of spill pathway
  - Planning discharge scenarios are:
    - Small
    - Medium
    - WCD

§112.20(h)(7)
Appendix F, Sec 1.7

FRP Spill Response Planning Levels-*Recap*

Planning scenario	Oil volume
Small	2,100 gallons or less
Medium	Greater than 2,100 gallons but less than or equal to 36,000 gallons or 10 percent of largest tank at facility, whichever is less
Worst Case	Calculated based on type of facility, number of containers, whether secondary containment is adequate, and capacity of largest aboveground storage tank (AST) Often the capacity of the largest AST

Response Capability: Small Discharge

Appendix E, Section 3.3:

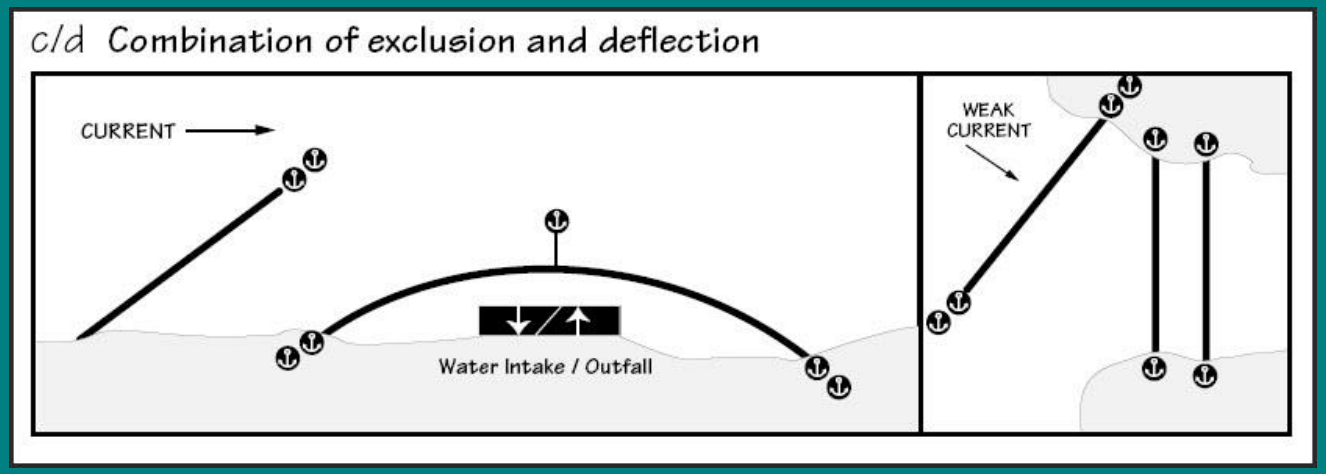
The response resources shall, *as appropriate*, include:

Equipment	Capacity	Timeline	Citation
Containment Boom*	**1,000 feet** *or* Twice the length of the largest vessel that regularly conducts oil transfers to or from the facility (whichever is greater)	Means of deploying within **1 hour** of the discovery of an oil discharge	Appendix E, Section 3.3.1
Oil Recovery Devices	Effective daily recovery capacity equal to or greater than the **amount of oil discharged in a small discharge**	Available at the facility within **2 hours** of the discovery of an oil discharge	Appendix E, Section 3.3.2
Oil Storage Capacity	Daily storage capacity equivalent to **twice the effective daily recovery capacity**, unless the owner/operator can show that a lower capacity is adequate	Available at the facility	Appendix E, Section 12.2

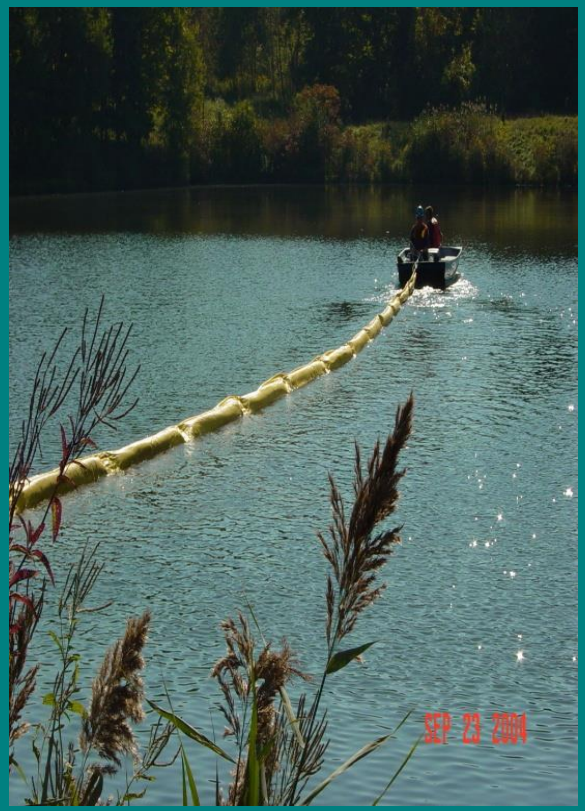
*** Other means of containment may be appropriate for inland facility (see next slide)**

Plan Implementation – Mitigation Measures

- Make sure to check the ACP to be consistent with protection strategies.
- Make sure to identify these strategies in the plan.
- Tactical plan sheets are good way to illustrate.



Containment Booming



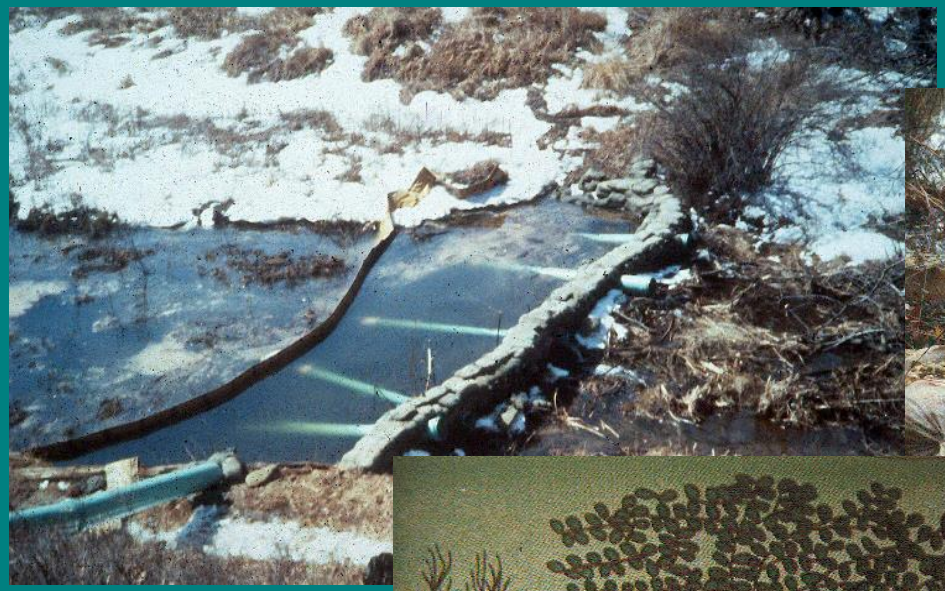
Exclusionary Booming

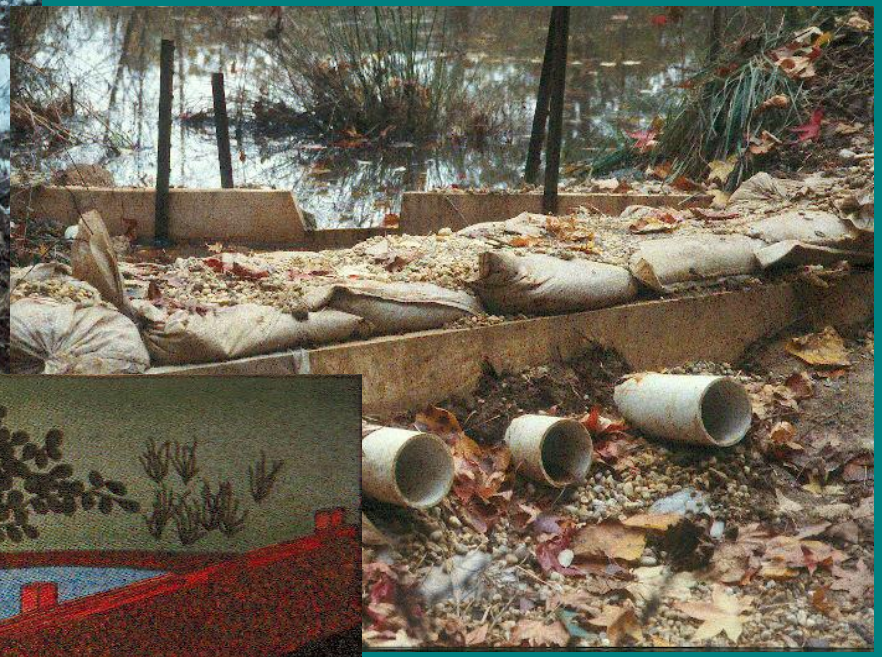
Inland “Small Stream” Containment - *Alternatives*

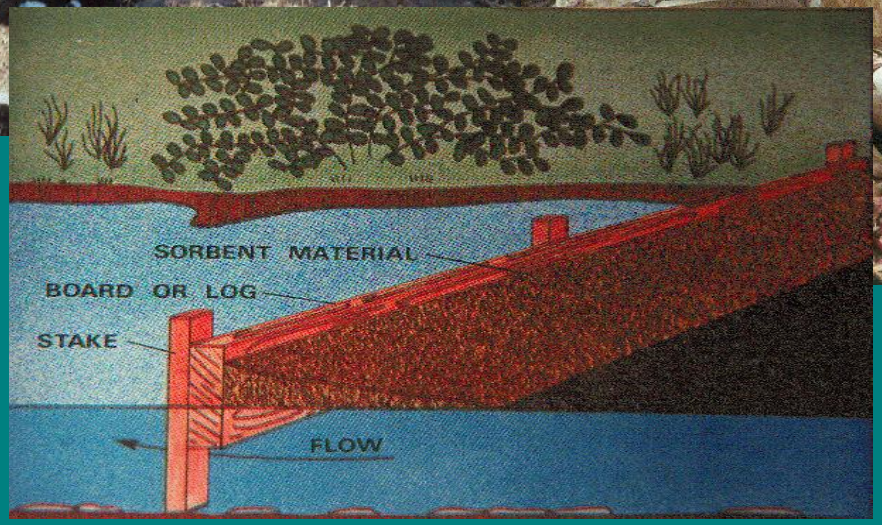
- Containment dams
- Underflow dams
- Inflatable diaphragms
- Spill gates

Note: These alternatives are now included in the revised PREP guidelines, effective June 2016. *More on this topic later…*

Berms, Underflow Dams







Determination of Response Resources – *A More Detailed Look at App. E*

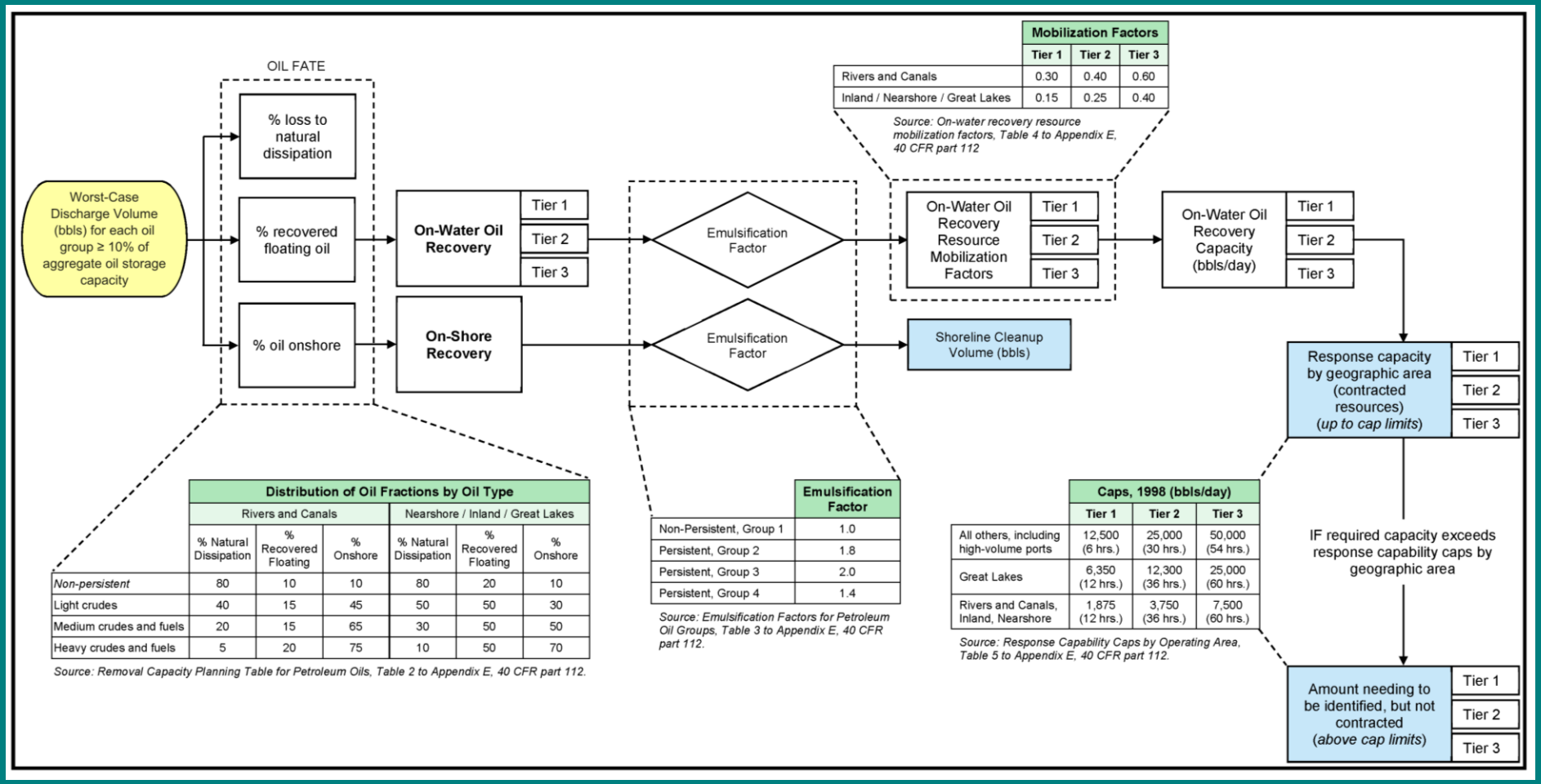
§§112.20(h)(7)
Appendix F, Sec 1.7
Appendix E, Sec 5

Determination of Required Response Resources for FRPs

- Appendix E includes procedures for identifying response resources necessary to address small, medium, and worst case discharges
- In applying Appendix E, plan preparers will want to ensure that response equipment is available:
  - In sufficient quantities
  - For the intended “operating environment”
  - Appropriate to the oil type
  - Can be mobilized within prescribed time standards
- Reviewers will also want to validate the operability and overall readiness of this equipment

Planning Volume for Response Resources, WCD

Appendix E, Attachment E-1



Mobilization Factors

	Tier 1	Tier 2	Tier 3
Rivers and Canals	0.30	0.40	0.60
Inland / Nearshore / Great Lakes	0.15	0.25	0.40

Source: On-water recovery resource mobilization factors, Table 4 to Appendix E, 40 CFR part 112

Distribution of Oil Fractions by Oil Type

	Rivers and Canals			Nearshore / Inland / Great Lakes		
	% Natural Dissipation	% Recovered Floating	% Onshore	% Natural Dissipation	% Recovered Floating	% Onshore
Non-persistent	80	10	10	80	20	10
Light crudes	40	15	45	50	50	30
Medium crudes and fuels	20	15	65	30	50	50
Heavy crudes and fuels	5	20	75	10	50	70

Source: Removal Capacity Planning Table for Petroleum Oils, Table 2 to Appendix E, 40 CFR part 112.

	Emulsification Factor
Non-Persistent, Group 1	1.0
Persistent, Group 2	1.8
Persistent, Group 3	2.0
Persistent, Group 4	1.4

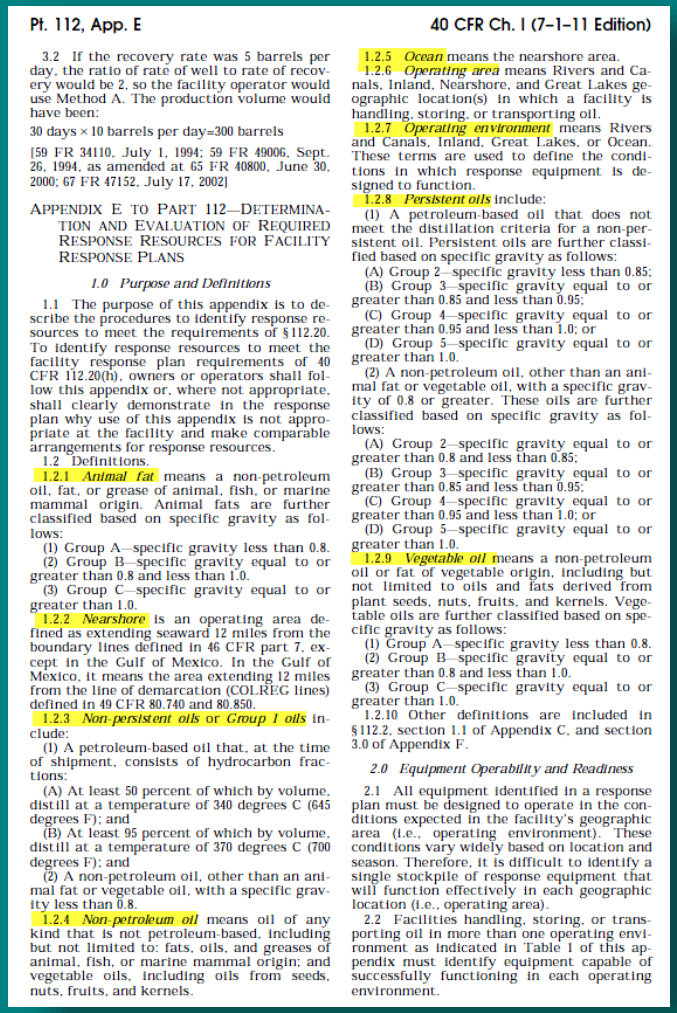
Source: Emulsification Factors for Petroleum Oil Groups, Table 3 to Appendix E, 40 CFR part 112.

	Caps, 1998 (bbls/day)		
	Tier 1	Tier 2	Tier 3
All others, including high-volume ports	12,500 (6 hrs.)	25,000 (30 hrs.)	50,000 (54 hrs.)
Great Lakes	6,350 (12 hrs.)	12,300 (36 hrs.)	25,000 (60 hrs.)
Rivers and Canals, Inland, Nearshore	1,875 (12 hrs.)	3,750 (36 hrs.)	7,500 (60 hrs.)

Source: Response Capability Caps by Operating Area, Table 5 to Appendix E, 40 CFR part 112.

Definitions

- Animal fat
- Nearshore
- Non-Persistent Oils or Group 1 Oils
- Non-petroleum
- Oceans
- Operating Area
- Operating Environment
- Persistent Oils
- Vegetable Oil



Pt. 112, App. E 40 CFR Ch. I (7–1–11 Edition)

3.2 If the recovery rate was 5 barrels per day, the ratio of rate of well to rate of recovery would be 2, so the facility operator would use Method A. The production volume would have been:

30 days × 10 barrels per day=300 barrels

[59 FR 34110, July 1, 1994; 59 FR 49006, Sept. 26, 1994, as amended at 65 FR 40800, June 30, 2000; 67 FR 47152, July 17, 2002]

APPENDIX E TO PART 112—DETERMINATION AND EVALUATION OF REQUIRED RESPONSE RESOURCES FOR FACILITY RESPONSE PLANS

1.0 Purpose and Definitions

1.1 The purpose of this appendix is to describe the procedures to identify response resources to meet the requirements of §112.20. To identify response resources to meet the facility response plan requirements of 40 CFR 112.20(h), owners or operators shall follow this appendix or, where not appropriate, shall clearly demonstrate in the response plan why use of this appendix is not appropriate at the facility and make comparable arrangements for response resources.

1.2 Definitions.

1.2.1 *Animal fat* means a non-petroleum oil, fat, or grease of animal, fish, or marine mammal origin. Animal fats are further classified based on specific gravity as follows:

(1) Group A—specific gravity less than 0.8.

(2) Group B—specific gravity equal to or greater than 0.8 and less than 1.0.

(3) Group C—specific gravity equal to or greater than 1.0.

1.2.2 *Nearshore* is an operating area defined as extending seaward 12 miles from the boundary lines defined in 46 CFR part 7, except in the Gulf of Mexico. In the Gulf of Mexico, it means the area extending 12 miles from the line of demarcation (COLREG lines) defined in 49 CFR 80.740 and 80.850.

1.2.3 *Non-persistent oils* or *Group 1 oils* include:

(1) A petroleum-based oil that, at the time of shipment, consists of hydrocarbon fractions:

(A) At least 50 percent of which by volume, distill at a temperature of 340 degrees C (645 degrees F); and

(B) At least 95 percent of which by volume, distill at a temperature of 370 degrees C (700 degrees F); and

(2) A non-petroleum oil, other than an animal fat or vegetable oil, with a specific gravity less than 0.8.

1.2.4 *Non-petroleum oil* means oil of any kind that is not petroleum-based, including but not limited to: fats, oils, and greases of animal, fish, or marine mammal origin; and vegetable oils, including oils from seeds, nuts, fruits, and kernels.

1.2.5 *Ocean* means the nearshore area.

1.2.6 *Operating area* means Rivers and Canals, Inland, Nearshore, and Great Lakes geographic location(s) in which a facility is handling, storing, or transporting oil.

1.2.7 *Operating environment* means Rivers and Canals, Inland, Great Lakes, or Ocean. These terms are used to define the conditions in which response equipment is designed to function.

1.2.8 *Persistent oils* include:

(1) A petroleum-based oil that does not meet the distillation criteria for a non-persistent oil. Persistent oils are further classified based on specific gravity as follows:

(A) Group 2—specific gravity less than 0.85;

(B) Group 3—specific gravity equal to or greater than 0.85 and less than 0.95;

(C) Group 4—specific gravity equal to or greater than 0.95 and less than 1.0; or

(D) Group 5—specific gravity equal to or greater than 1.0.

(2) A non-petroleum oil, other than an animal fat or vegetable oil, with a specific gravity of 0.8 or greater. These oils are further classified based on specific gravity as follows:

(A) Group 2—specific gravity equal to or greater than 0.8 and less than 0.85;

(B) Group 3—specific gravity equal to or greater than 0.85 and less than 0.95;

(C) Group 4—specific gravity equal to or greater than 0.95 and less than 1.0; or

(D) Group 5—specific gravity equal to or greater than 1.0.

1.2.9 *Vegetable oil* means a non-petroleum oil or fat of vegetable origin, including but not limited to oils and fats derived from plant seeds, nuts, fruits, and kernels. Vegetable oils are further classified based on specific gravity as follows:

(1) Group A—specific gravity less than 0.8.

(2) Group B—specific gravity equal to or greater than 0.8 and less than 1.0.

(3) Group C—specific gravity equal to or greater than 1.0.

1.2.10 Other definitions are included in §112.2, section 1.1 of Appendix C, and section 3.0 of Appendix F.

2.0 Equipment Operability and Readiness

2.1 All equipment identified in a response plan must be designed to operate in the conditions expected in the facility's geographic area (i.e., operating environment). These conditions vary widely based on location and season. Therefore, it is difficult to identify a single stockpile of response equipment that will function effectively in each geographic location (i.e., operating area).

2.2 Facilities handling, storing, or transporting oil in more than one operating environment as indicated in Table 1 of this appendix must identify equipment capable of successfully functioning in each operating environment.

[Appendix E, Section 1.0]

Equipment Operability and Readiness

- Must be designed to operate in conditions expected in the operational environment and facility's geographic area
- Conditions vary widely based on location and seasons
- Difficult to identify a single stockpile of response equipment to function effectively in each geographic location

[Appendix E, Section 2.1]

Equipment Operability and Readiness
(continued)

- Facility handling, storing, or transporting oil in more than one operating area
  - Identify equipment capable of successfully functioning in each operating environment
- Identify equipment for response in Plan
- Consider inherent limitations of the operability of equipment components and response systems
- Use Table 1 of Appendix E to evaluate operability in various operating environments

[Appendix E, Section 2.2 - 2.3]

Response Resource Operating Criteria

TABLE 1 TO APPENDIX E—RESPONSE RESOURCE OPERATING CRITERIA

Oil Recovery Devices

Operating environment	Significant wave height[1]	Sea state
Rivers and Canals	≤ 1 foot	1
Inland	≤ 3 feet	2
Great Lakes	≤ 4 feet	2–3
Ocean	≤ 6 feet	3–4

Example facility's operating environment

Boom

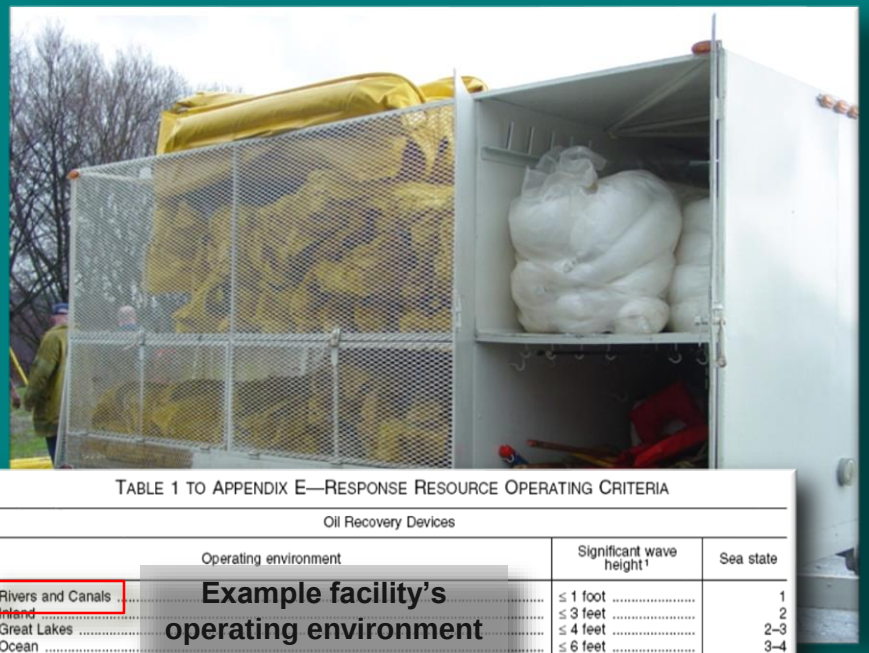
Boom property	Use			
	Rivers and canals	Inland	Great Lakes	Ocean
Significant Wave Height[1]	≤ 1	≤ 3	≤ 4	≤ 6
Sea State	1	2	2–3	3–4
Boom height—inches (draft plus freeboard)	6–18	18–42	18–42	≥ 42
Reserve Buoyancy to Weight Ratio	2:1	2:1	2:1	3:1 to 4:1
Total Tensile Strength—pounds	4,500	15,000–20,000.	15,000–20,000.	≥ 20,000
Skirt Fabric Tensile Strength—pounds	200	300	300	500
Skirt Fabric Tear Strength—pounds	100	100	100	125

[1] Oil recovery devices and boom *shall* be at least capable of operating in wave heights up to and including the values listed in Table 1 for each operating environment.

Response Resource Operating Criteria

(*continued*)

- Criteria in Table 1 reflects the general conditions in certain operating environments
- RA may require documentation to ensure that boom meets the criteria in Table 1
  - If missing documentation, RA may require that boom be tested to demonstrate that it meets criteria
  - Test in accordance with ASTM 715, ASTM F989 or other test approved by EPA



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Example facility's operating environment

Boom

Boom property	Use			
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Significant Wave Height[1]	≤ 1	≤ 3	≤ 4	≤ 6
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Boom height—inches (draft plus freeboard)	6–18	18–42	18–42	≥ 42
Reserve Buoyancy to Weight Ratio	2:1	2:1	2:1	3:1 to 4:1
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Skirt Fabric Tear Strength—pounds	100	100	100	125

[1] Oil recovery devices and boom *shall* be at least capable of operating in wave heights up to and including the values listed in Table 1 for each operating environment.

[Appendix E, Section 2.3]

Response Resource Operating Criteria

(*continued*)

- Table 1 only addresses requirements for oil recovery devices and boom
- All other equipment necessary to sustain or support response operation
  - Must be designed to function in same conditions
  - Refer to Area Contingency Plan (ACP) to determine if ice, debris, and weather-related visibility are significant factors to evaluate operability of equipment
- Response resources must be able to arrive within the time stated in the plan
- Plan must include details of the equipment and storage location

[Appendix E, Section 2.4 - 2.7]

Required Response Resources for EPA FRP Facilities

- Response Resources for a Small Discharge (less than or equal to 2,100 gallons):
  - USCG refers to this category as “average most probable discharge”
  - 1000 ft. of containment boom (not sorbent boom) or, if a marine transfer facility, containment boom equal to twice the length of the largest vessel regularly conducting transfers at the facility capable of deploying boom within 1 hour of small discharge discovery
  - Oil recovery devices with an effective daily recovery capacity equal to the amount of the oil discharged in a small discharge or greater at the facility within 2 hours of the detection of a small discharge
  - Available temporary storage capacity equal to twice the volume of the small discharge

[Appendix E, Section 3.0]

Boom Considerations

- Boom elements
  - Above-water freeboard
  - Flotation device
  - Below-water “skirt”
  - Longitudinal support
- Selection considerations
  - River flowrate, current, and tidal information to determine if appropriate boom can hold the pressure and not fail
  - Length of deployment/goal of booming operation
    - Contain, deflect, protect
  - Anchoring method
  - Boat safety operations and capabilities

Boom Considerations *(continued)*

- Commercial boom types
  - Fence boom
  - Curtain boom
  - External tension member boom (uncommon)
- A sorbent boom is not a containment boom
  - Can be used for final polishing, to remove small trace of oil or sheen, or as backup to containment boom

Boom Deployment *(continued)*

- Boom functions
  - Protect (shorelines, creeks, wetlands, water intakes, etc.)
  - Deflect (move oil to a collection point)
  - Contain (hold oil within collection location)
- Booming strategies
  - Containment booming *(contain)*
  - Exclusionary booming *(protect)*
  - Diversionary booming *(deflect)*
  - Shore seal booming *(protect)*
- Other strategies
  - Berms, underflow dams *(contain)*

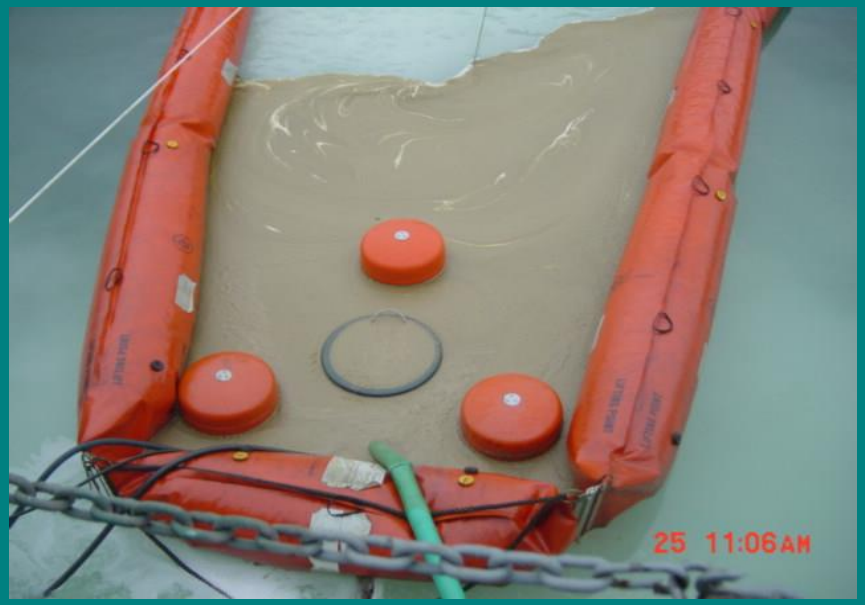
Oil Recovery Devices

- GIUE performance evaluation criteria:
  - Oil recovery devices available within 2 hours of discovery of the spill
  - Must have effective daily recovery capability equal to amount of oil released in a small discharge (i.e., 2,100 gallons)
  - Deployed and ready to start oil recovery
  - Actual pumping of water is not required

Oil Recovery Devices: Skimmers

- Suction

- Weir



» Best in calm water
» Low recovery oil/water ratio
» Low to medium viscosity oil

Oil Recovery Devices: Skimmers *(continued)*

- Rope mop

  - Low to medium viscosity oil
  - Good in debris and ice conditions and shallow water

- Disc

  - Medium viscosity oils
  - Higher oil/water ratio
  - Calm and shallow waters

Oil Recovery Devices: Skimmers *(continued)*

- Drum

  - Light and medium viscosity oils
  - Good debris handling capability
  - Calm and shallow waters

- Belt Type Skimmer
  (e.g., Chain Brush)

  - Medium to heavy oils
  - Excellent debris handling
  - Fast deployment

Oil Recovery Devices: Others

- Vacuum Truck

Provisions for Storage of Recovered Oil

- GIUE performance evaluation criteria:
  - Oil storage capacity for recovered oily material equivalent to twice the effective daily recovery capacity required on-scene, or 4,200 gallons per day

Required Response Resources for EPA FRP Facilities *(continued)*

- Response Resources for a Medium Discharge (36,000 gals or 10% of WCD, whichever is less):
  - Availability of sufficient quantities of boom for containment & collection and for protection of fish, wildlife and sensitive environments
  - Oil recovery devices with an effective daily recovery capacity equal to 50% of the total volume of the medium discharge
  - Equipment arrival times within 6 hours (high volume ports & Great Lakes) and 12 hours (all other areas)
  - Available temporary storage capacity equal to the volume of the medium discharge
  - USCG equivalent category is “maximum most probable discharge” and is 1,200 barrel (50,400 gallons) or 10% of WCD, whichever is less

[Appendix E, Section 4.0]

Required Response Resources for EPA FRP Facilities *(continued)*

- Response Resources for a Worst Case Discharge (as calculated based on Appendix D):
  - Respond to maximum extent practicable
  - USCG WCD calculation is different-if facility is a complex, then prepare for whichever WCD is greater
  - If required to plan for response in shallow water, at least 20% of the on-water response equipment shall, as appropriate, be capable of operating in water of 6 feet or less
  - Availability of temporary storage capacity equal to twice the response equipment's daily recovery capacity (see Section 12.2)
  - Effective daily recovery capacity cannot exceed temporary storage capacity limits
  - Sections 7 and 10.0 of Appendix E describe method to determine necessary response resources (see also Attachment E-1 of Appendix E)

[Appendix E, Section 5.0]

Required Response Resources for EPA FRP Facilities *(continued)*

Response Resources for a Worst Case Discharge:

- Must arrive in times specified for the 3 levels of response tiers
- Response resources identified in the plan must arrive at the scene of a discharge within the times specified for the applicable response tier listed as follows:

	Tier 1 (in hours)	Tier 2 (in hours)	Tier 3 (in hours)
Higher volume port areas	6	30	54
Great Lakes	12	36	60
All other river and canal, inland, and nearshore areas	12	36	60

Example facility's operating environment

[Appendix E, Section 5.3]

Shoreline Cleanup Resource Planning Groups 1-4 Oils

- Determine:
  - WCD for facility
  - Groups of oils at facility-conduct calculations for each group stored at facility
  - Geographic area in which facility is located (i.e., operating areas)
- Use Table 2 to calculate percentages of total volume to be used for shoreline cleanup resource planning
- Shoreline cleanup planning volume adjusted to reflect emulsification factor in Table 3 (follow same procedure used to calculate on-water recovery volume)
- Identify OSRO with appropriate shoreline cleanup capability

[Appendix E, Section 7.3]

Removal Response Resource Planning Groups 1-5 Oils

Example facility's oil groups requiring separate calculations

TABLE 2 TO APPENDIX E—REMOVAL CAPACITY PLANNING TABLE FOR PETROLEUM OILS

Spill location	Rivers and canals			Nearshore/Inland/Great Lakes		
Sustainability of on-water oil recovery	3 days			4 days		
Oil group [1]	Percent natural dissipation	Percent recovered floating oil	Percent oil onshore	Percent natural dissipation	Percent recovered floating oil	Percent oil onshore
1—Non-persistent oils	80	10	10	80	20	10
2—Light crudes	40	15	45	50	50	30
3—Medium crudes and fuels	20	15	65	30	50	50
4—Heavy crudes and fuels	5	20	75	10	50	70

[1] The response resource considerations for non-petroleum oils other than animal fats and vegetable oils are outlined in section 7.7 of this appendix.

Note: Group 5 oils are defined in section 1.2.8 of this appendix; the response resource considerations are outlined in section 7.6 of this appendix.

Note: Once a petroleum-based oil is determined NOT to meet the distillation criteria for a non-persistent oil, this oil is classified as a *persistent oil.* Persistent oils are further grouped based on their specific gravities, as shown in the definition of persistent oils.

Required Response Resource Planning Emulsification Factors For Groups 1-5 Oils

TABLE 3 TO APPENDIX E—EMULSIFICATION FACTORS FOR PETROLEUM OIL GROUPS [1]

Example facility's oil groups requiring separate calculations

Non-Persistent Oil:	
Group 1	1.0
Persistent Oil:	
Group 2	1.8
Group 3	2.0
Group 4	1.4

Group 5 oils are defined in section 1.2.7 of this appendix; the response resource considerations are outlined in section 7.6 of this appendix.

[1] See sections 1.2.2 and 1.2.7 of this appendix for group designations for non-persistent and persistent oils, respectively.

Required Response Resource Planning Resource Mobilization Factors

Select the recovery resource mobilization factors from Table 4 for the facility's operating area.

- **Mobilization factors reflect the tiering of on-water oil recovery capacity that must be mobilized within the first 3 days of an incident.**
- **Each factor reflects a percentage of the total on-water recovery requirement.**
- **Required recovery equipment must be on scene within the time specified for the applicable tier.**

TABLE 4 TO APPENDIX E—ON-WATER OIL RECOVERY RESOURCE MOBILIZATION FACTORS

Operating area	Tier 1	Tier 2	Tier 3
Rivers and Canals	0.30	0.40	0.60
Inland/Nearshore Great Lakes	0.15	0.25	0.40

Example facility's operating area

Note: These mobilization factors are for total resources mobilized, not incremental response resources.

Response Capability Caps by Operating Area

Identify the caps on response resources that the facility must identify and have available by contract or other approved means from Table 5.

Table 5 to Appendix E--Response Capability Caps by Operating Area

	Tier 1	Tier 2	Tier 3
February 18, 1993:			
All except Rivers & Canals, Great Lakes.....	10K bbls/day	20K bbls/day	40K bbls/day.
Great Lakes.....	5K bbls/day	10K bbls/day	20K bbls/day.
Rivers & Canals.....	1.5K bbls/day	3.0K bbls/day	6.0K bbls/day.
February 18, 1998:			
All except Rivers & Canals, Great Lakes.....	12.5K bbls/day	25K bbls/day	50K bbls/day.
Great Lakes.....	6.35K bbls/day	12.3K bbls/day	25K bbls/day.
Rivers & Canals.....	1.875K bbls/day	3.75K bbls/day	7.5K bls/day.
February 18, 2003:			
All except Rivers & Canals, Great Lakes.....	TBD	TBD	TBD.
Great Lakes.....	TBD	TBD	TBD.
Rivers & Canals.....	TBD	TBD	TBD.

Example facility's operating area

Note: The caps show cumulative overall effective daily recovery capacity, not incremental increases.
TBD=To Be Determined.

Response Planning Levels
Example Onshore Facility-Adequate Secondary Containment and WCD *(continued)*

Response Planning Level	All Tanks in Adequate Secondary Containment
Small	≤ 2,100 gallons/ 50 barrels
Medium	36,000 gallons/ 857 barrels
Group 1 Oil WCD	2,500,000 gallons/ 59,524 barrels
Group 2 Oil WCD	1,500,000 gallons/ 35,714 barrels

Required Response Resources
Example Facility-Group 2 Oil WCD

All Tanks in Adequate Secondary Containment	Not All Tanks in Adequate Secondary Containment
1,500,000 gallons or 35,714 barrels	3,000,000 gallons or 71,429 barrels

Attachment E-1 --
Worksheet to Plan Volume of Response Resources
for Worst Case Discharge - Petroleum Oils

Part I Background Information

Step (A) Calculate Worst Case Discharge in barrels (Appendix D) **35,714** (A)

Step (B) Oil Group[1] (Table 3 and section 1.2 of this appendix) . **2**

Step (C) Operating Area (choose one) . . . . [ ] Near shore/Inland Great Lakes [X] or Rivers and Canals

Step (D) Percentages of Oil (Table 2 of this appendix)

Percent Lost to Natural Dissipation	Percent Recovered Floating Oil	Percent Oil Onshore
40	15	45
(D1)	(D2)	(D3)

[1] A facility that handles, stores, or transports multiple groups of oil must do separate calculations for each oil group on site except for those oil groups that constitute 10 percent or less by volume of the total oil storage capacity at the facility. For purposes of this calculation, the volumes of all products in an oil group must be summed to determine the percentage of the facility's total oil storage capacity.

Attachment E-1 --
Worksheet to Plan Volume of Response Resources
for Worst Case Discharge - Petroleum Oils

Part I Background Information

Step (A) Calculate Worst Case Discharge in barrels (Appendix D) **71,429** (A)

Step (B) Oil Group[1] (Table 3 and section 1.2 of this appendix) . **2**

Step (C) Operating Area (choose one) . . . . [ ] Near shore/Inland Great Lakes [X] or Rivers and Canals

Step (D) Percentages of Oil (Table 2 of this appendix)

Percent Lost to Natural Dissipation	Percent Recovered Floating Oil	Percent Oil Onshore
40	15	45
(D1)	(D2)	(D3)

[1] A facility that handles, stores, or transports multiple groups of oil must do separate calculations for each oil group on site except for those oil groups that constitute 10 percent or less by volume of the total oil storage capacity at the facility. For purposes of this calculation, the volumes of all products in an oil group must be summed to determine the percentage of the facility's total oil storage capacity.

Required Response Resources Example Facility-WCD, Group 1

Group 1 Oil	All Tanks in Adequate Secondary Containment			Not All Tanks in Adequate Secondary Containment		
WCD (barrels)	59,524			88,214		
On-Water Recovery Capacity (barrels/day)						
By Contract or Other Approved Means	Tier 1	Tier 2	Tier 3	Tier 1	Tier 2	Tier 3
	1,786	2,381	3,571	1,875	3,528	5,293
Required to be Identified	0	0	0	771	0	0
Temporary Storage Capacity (barrels/day)						
By Contract or Other Approved Means	3,572	4,762	7,142	3,750	7,056	10,586
Required to be Identified	0	0	0	1,542	0	0
Shoreline Cleanup Capacity (barrels)						
By Contract or Other Approved Means	5,952			8,821		

Required Response Resources Example Facility-WCD, Group 2

Group 2 Oil	All Tanks in Adequate Secondary Containment			Not All Tanks in Adequate Secondary Containment		
WCD (barrels)	35,714			71,429		
On-Water Recovery Capacity (barrels/day)						
By Contract or Other Approved Means	Tier 1	Tier 2	Tier 3	Tier 1	Tier 2	Tier 3
	1,875	3,750	5,786	1,875	3,750	7,500
Required to be Identified	1,018	107	0	3,750	3,964	4,071
Temporary Storage Capacity (barrels/day)						
By Contract or Other Approved Means	3,750	7,500	11,572	3,750	7,500	15,000
Required to be Identified	2,036	214	0	7,500	7,928	8,142
Shoreline Cleanup Capacity (barrels)						
By Contract or Other Approved Means	28,928			57,857		

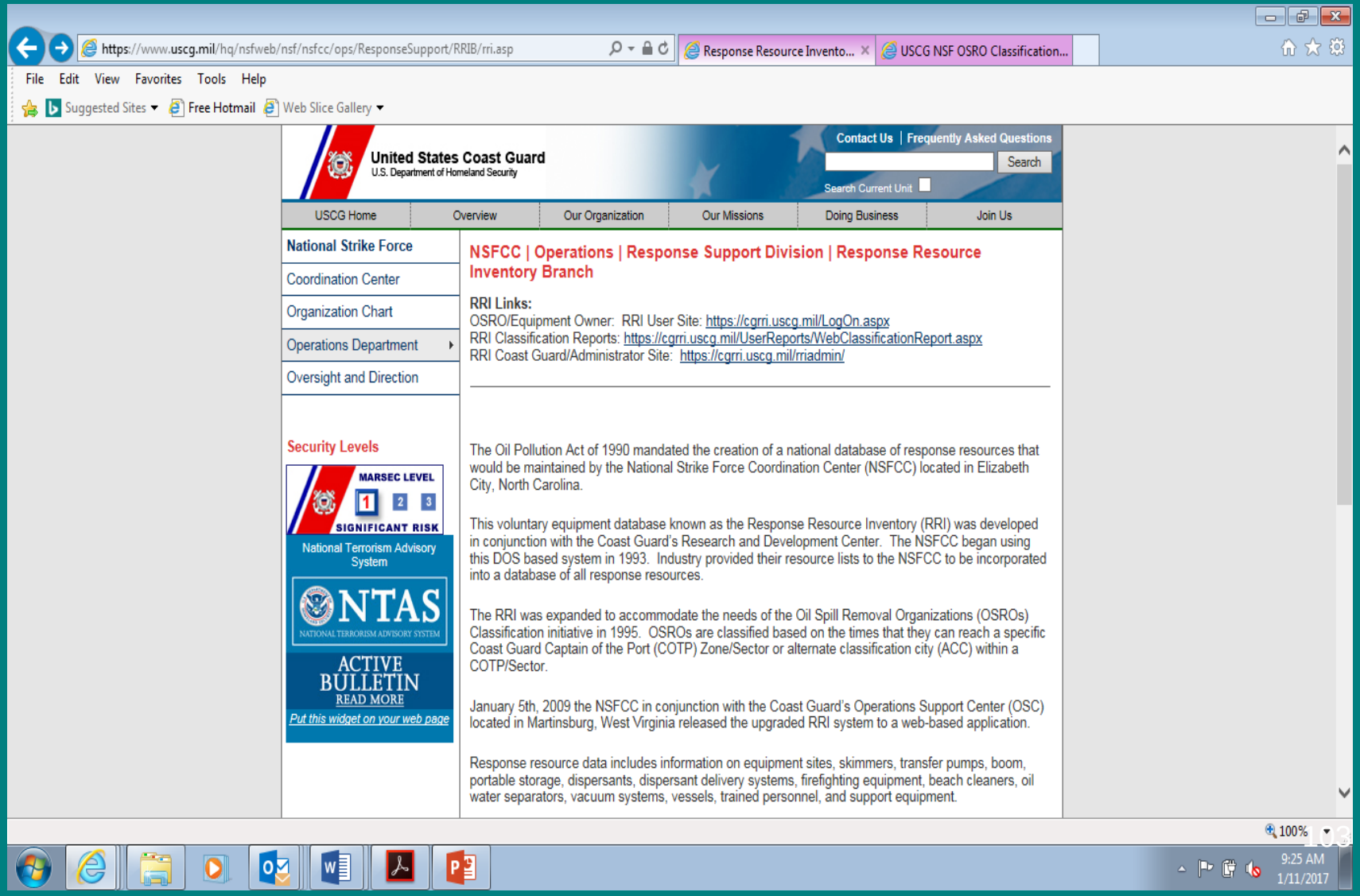
The facility has to plan for the amount of response resources required for the WCD of Group 2 oil, which results in the largest on-water oil recovery volumes.

Response Resources for Group 5 Oils

- Shall include as appropriate:
  - Sonar, sampling equipment, or other methods for locating the oil on the bottom or suspended in water column;
  - Containment boom, sorbent boom, silt curtains, or other methods for containing the oil that may remain floating on the surface or to reduce spreading on the bottom;
  - Dredges, pumps, or other equipment necessary to recover oil from the bottom and shoreline;
  - Equipment necessary to assess the impact of such discharges;
  - Other appropriate equipment necessary to respond to a discharge involving the type of oil handled, stored, or transported
- Deployed within 24 hours of discovery of discharge to facility

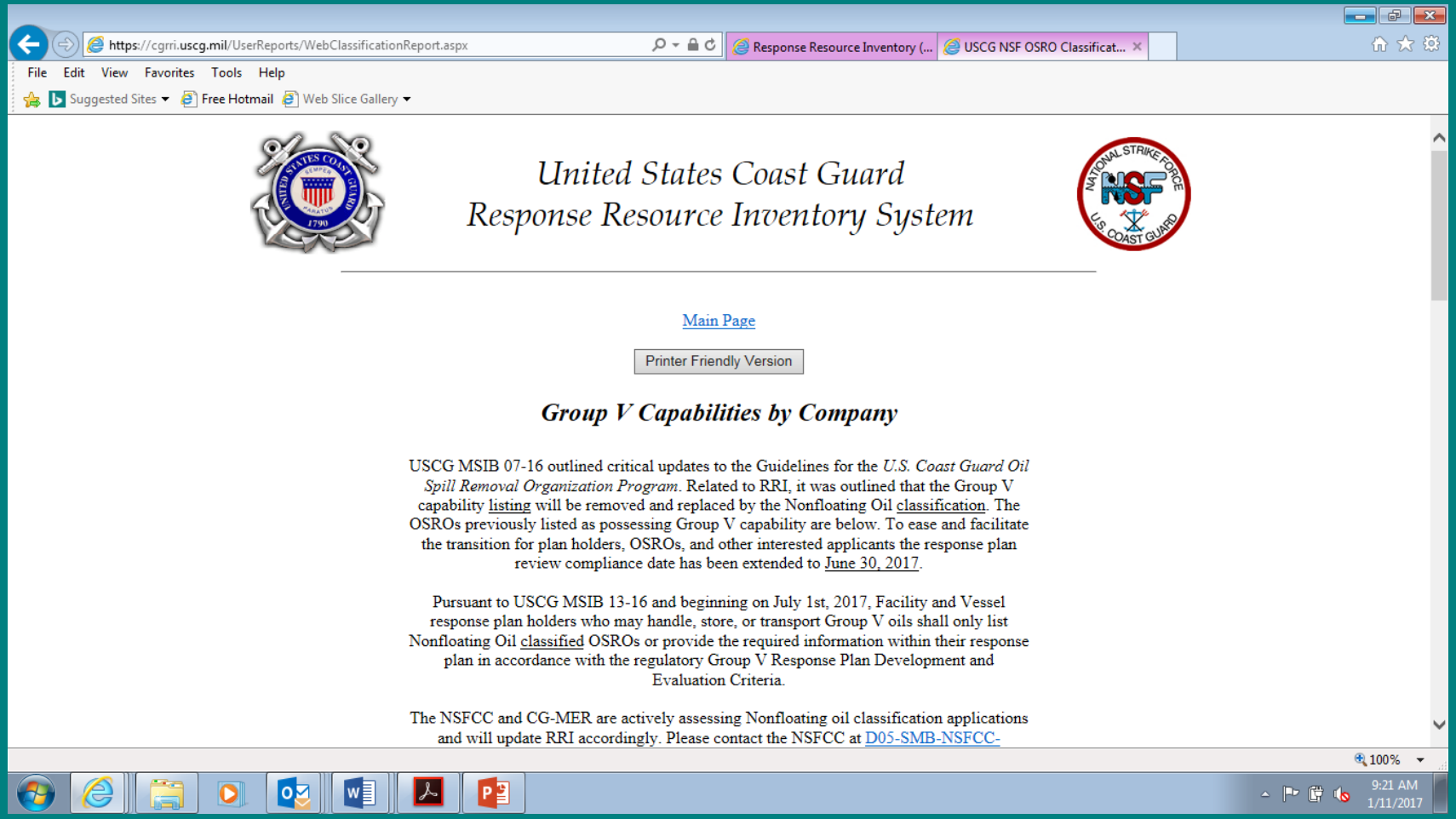
[Appendix E, Section 7.6]

NSFCC Homepage

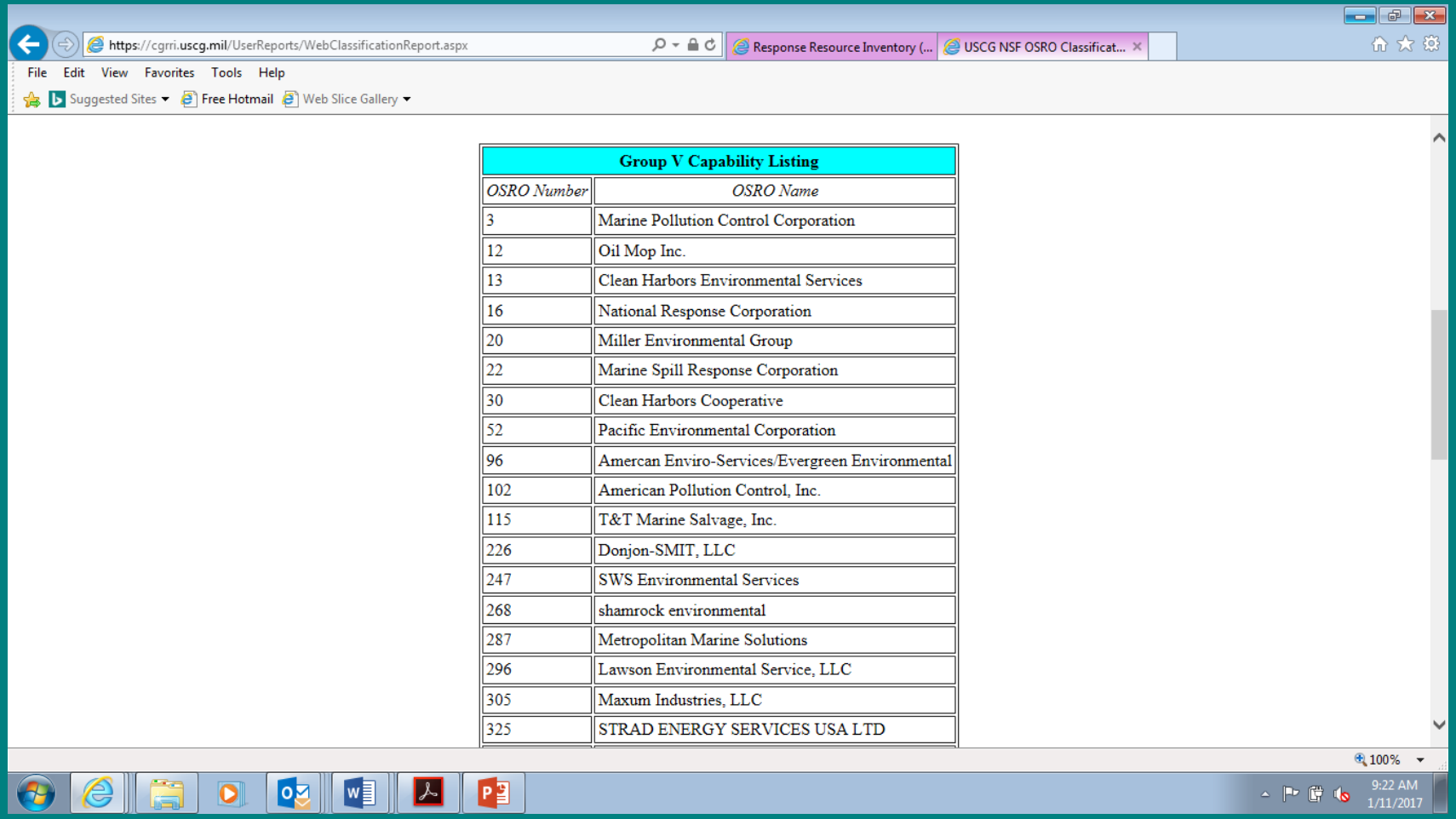


USCG RRI Homepage

USCG RRI, Group V OSRO List



Ex. RRI Group V OSRO List



Group V Capability Listing	
OSRO Number	*OSRO Name*
3	Marine Pollution Control Corporation
12	Oil Mop Inc.
13	Clean Harbors Environmental Services
16	National Response Corporation
20	Miller Environmental Group
22	Marine Spill Response Corporation
30	Clean Harbors Cooperative
52	Pacific Environmental Corporation
96	Amercan Enviro-Services/Evergreen Environmental
102	American Pollution Control, Inc.
115	T&T Marine Salvage, Inc.
226	Donjon-SMIT, LLC
247	SWS Environmental Services
268	shamrock environmental
287	Metropolitan Marine Solutions
296	Lawson Environmental Service, LLC
305	Maxum Industries, LLC
325	STRAD ENERGY SERVICES USA LTD

Plan Implementation

- Disposal plan must:
  - Be in accordance with Resources Conservation and Recovery Act (RCRA)
  - Identify how and where disposal of spill material will be handled
  - Identify required agency permits and regulations:
    - Federal
    - State
    - Local

§112.20(h)(7)
Appendix F, Sec 1.7

Plan Implementation

- Disposal plan must *(continued):*
  - Account for:
    - Recovered product
    - Contaminated soil
    - Contaminated equipment/materials
    - Drums/tank parts
    - Valves
    - Spent chemicals
    - Personal Protective Equipment (PPE)
    - Sorbents
    - Decontamination solution
  - Be included in the SPCC

§112.20(h)(7)
Appendix F, Sec 1.7

Plan Implementation

- Containment and drainage planning
  - Proper plan to contain and control a spill through drainage to limit the threat to human health and the environment, including:
    - Available volume of containment
    - Route of drainage from oil storage transfer area
    - Construction materials used in drainage trough
    - Type of valve and amount of valves
    - Separators used in drainage system
    - Sump and pump capacities
    - Containment capacity of weirs and booms to be used and locations
    - Other cleanup materials

§112.20(h)(7)
Appendix F, Sec 1.7

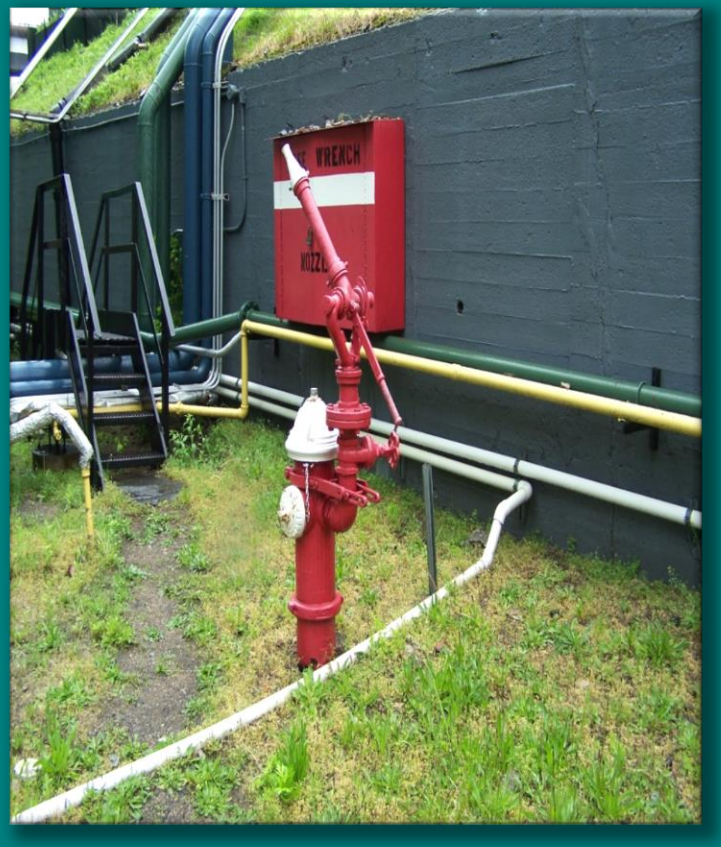
Plan Implementation

- Containment and drainage planning *(continued)*
  - Meet the SPCC requirements for drainage inspection and monitoring
  - A copy of the containment and drainage plans in the SPCC Plan may be inserted into the FRP, including any diagrams

§112.20(h)(7)
Appendix F, Sec 1.7

Firefighting Resources

- Include fire fighting capability in plan
- Ensure availability of fire fighting resources-by contract or other approved means
- An individual must be identified to work with the fire department for Group 1-5 oil fires
- Personnel appropriately trained and available within reasonable response time



[Appendix E, Section 7.4, 7.6, 7.7]

1.8 Self Inspection, Drills/Exercises, and Response Training

Self-Inspection, Drills and Exercises and Response Training

- FRP must include:
  - Checklist and record of inspections for bulk storage containers, secondary containment systems and response equipment
  - Description of training program *[refer to 112.21(b)]*
  - Description of drill/exercise program *[refer to 112.21(c)]*
  - Log of discharge prevention meetings, training sessions, and drills and exercises
- Records and logs must be maintained for **five** years
  - SPCC records must be maintained for three years

§112.20(h)(8)
Appendix F, Sec 1.8

Inspection Sample Logs

- Tank inspection checklist
  - Check for leaks
    - Look for drip marks, discoloration of tanks, puddles of spilled material, corrosions, and cracks.
  - Check piping
    - Look for leaks, discoloration, corrosion, bowing of pipes between supports, evidence of seepage from valves or seals and localized dead vegetation.
  - Check foundation
    - Look for cracks, discoloration, spilled materials, settling, gaps between tank and foundation and damage by roots.

TANK/SURFACE IMPOUNDMENT INSPECTION LOG			
Inspector	Tank or SI #	Date	Comments

§112.20(h)(8)
Appendix F, Sec 1.8

Inspection Sample Logs *(continued)*

- Response equipment inspection checklist
  - Inventory
  - Storage location
  - Accessibility
  - Operational status/condition
  - Actual use and testing (last test date and frequency of testing)
  - Shelf life (present age, expected replacement date)

RESPONSE EQUIPMENT INSPECTION LOG		
Inspector	Date	Comments

§112.20(h)(8)
Appendix F, Sec 1.8

Inspection Sample Logs *(continued)*

- Secondary containment inspection checklist
  - Dike or berm system
    - Level of precipitation
    - Operational status of drainage valves
    - Dike or berm permeability
    - Debris, erosion
    - Location and status of pipes, inlets, and drainage beneath tank
  - Secondary containment
    - Cracks, discoloration
    - Presence of spilled material
    - Corrosion, and valve condition
  - Retention and drainage ponds
    - Erosion
    - Available capacity
    - Leaked material
    - Debris and stressed vegetation

§112.20(h)(8)
Appendix F, Sec 1.8

Training/Exercises Sample Logs

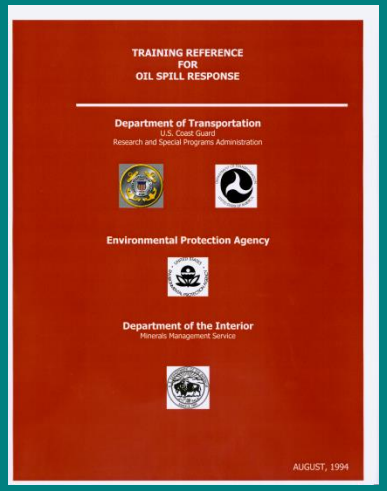
PERSONNEL RESPONSE TRAINING LOG		
Name	Response training/date and number of hours	Prevention training/date and number of hours

DISCHARGE PREVENTION MEETING LOGS		
Date		
Attendees		
Subject/Issue identified	Required action	Implementation date

§112.20(h)(8)
Appendix F, Sec 1.8

Response Training

- Must provide adequate training for:
  - QI
  - Facility personnel
  - Spill management teams
- For example, scope of QI and facility personnel training:
  - Notification procedures, communication systems, internal response organizations
  - Procedures for mitigating a discharge or threat of a discharge, including site safety and security
  - Hazard recognition and evaluation and emergency and evacuation procedures



§112.20(h)(8)
§112.21(b)
Appendix F, Sec 1.8

Facility Drills and Exercises

- Use the **PREP** guidelines or equivalent
  - Combination of internal and external exercises
  - Range of exercises cover all aspects of the FRP over a three-year cycle
  - RA must approve program if not based on PREP guidelines
- Facility receives credit for area or facility-specific exercises for actual response to a spill if:
  - ☑ Plan was utilized for response
  - ☑ Objectives were met
  - ☑ The response was properly evaluated, documented, and self-certified

§112.20(h)(8)
§112.21(c)
Appendix F, Sec 1.8

2016 National Preparedness for Response Exercise Program (PREP) Guidelines

- On April 11, 2016, the United States Coast Guard announced the updated 2016 National Preparedness for Response Exercise Program (PREP) Guidelines (81 FR 21362). PREP was developed to establish a workable exercise program that meets the intent of section 4202(a) of the Oil Pollution Act of 1990 (OPA 90). PREP provides a mechanism for compliance with the exercise requirements.
- Completion of the exercises described in the PREP Guidelines is one option for maintaining compliance with OPA 90-mandated federal oil pollution response exercise requirements.
- See EPA link at: https://www.epa.gov/oil-spills-prevention-and-preparedness-regulations/2016-national-preparedness-response-exercise

PREP Guidelines Revisions

- Added OSRO familiarization training recommendation to Section 2.
- Added alternatives to containment boom for inland plan holders.
- EPA's Section 4 does not have substantive changes.
- New guidelines became effective on June 10, 2016.

2016 PREP Guidelines
OSRO Familiarization Training

2.3.6.1 OSRO Involvement in Equipment Deployment Exercises

- Plan holders are encouraged to conduct familiarization training with each OSRO cited in the response plan to provide information such as equipment launching locations, tides and currents of the local area, and any other logistical problems or information specific to the particular area.
- This familiarization training may include a walk-through or actual equipment deployment as appropriate, such that each OSRO can be made aware of any logistical problems related to equipment deployment. It is the plan holder's responsibility to ensure that the OSRO has completed response exercise requirements.

2016 PREP Guidelines
Booming Systems

2.3.6.6.1 Oil Response Systems

Section 4. Booming Systems. Booming systems include protective and containment boom not exercised as part of a skimming or ISB system described above; 1,000 feet (or total amount of boom listed in plan, whichever is less, particularly for inland plan holders located near small water bodies) of each protective or containment boom system or alternative system listed in the plan and relied on by the plan holder in meeting response equipment capability requirements should be deployed.

2016 PREP Guidelines
Alternatives to Booming Systems

Section 4. Booming Systems (cont'd)

h. Alternative systems, particularly for inland plan holders, may include the following:

i. Temporary dams

ii. Underflow dams (see R7 slides at end of module)

iii. Weirs

iv. Inflatable diaphragms for drainage culverts

These alternative systems may be used by the plan holder in the initial response to an oil discharge in conjunction with booming systems, which may be used further downstream in the planning distance.

2016 PREP Guidelines
Alternatives to Booming Systems

2.3.7.2 Government-Initiated Unannounced Exercises

2.3.7.2.3 Non-Transportation-Related Facilities Regulated by the EPA

Performance metrics to think about for FRP development:

- Arrival of containment boom and/or alternative systems as specified in the FRP within one hour of detection of the discharge and subsequent successful deployment.
- For alternative systems using temporary dams or underflow dams, simulated installation of these systems according to the FRP is expected to be performed for a successful GIUE.
- For plans using both containment boom and alternative systems, successful boom deployment and simulated installation of the alternative systems is expected for a successful GIUE.

2018 Revisions to PREP Guidelines

- On October 2, 2018, the United States Coast Guard announced revisions to the 2016 National Preparedness for Response Exercise Program (PREP) Guidelines (83 FR 49563).
- No substantive revisions to EPA's provisions.
- Addressed request to provide alternatives to response times in Appendix E.

PREP Exercise Components

Element	Frequency*	Initiating Authority	Notes
QI Notification Exercises	Quarterly	Facility owner or operator	At least one exercise conducted during non-business hours.
Emergency Procedures Exercises	Quarterly	Facility owner or operator	*Optional: can be used by facilities as an unannounced exercise.*
Incident Management Team Tabletop Exercise	Annually	Facility owner or operator	At least one exercise every 3 years must involve a worst-case discharge scenario.
Equipment Deployment Exercises	Semiannually (Annual for OSRO-dependent)	Facility owner or operator	If OSRO-owned equipment is identified in the Plan, the OSRO equipment must also be deployed and operated. OSRO must provide documentation to facility owner or operator, if OSRO dependent.
Government-Initiated Unannounced Exercises	**Triennially**	**EPA, USCG, BSEE, DOT-PHMSA**	**If successfully completed, the facility can only be subject to a GIUE once every 3 years.**

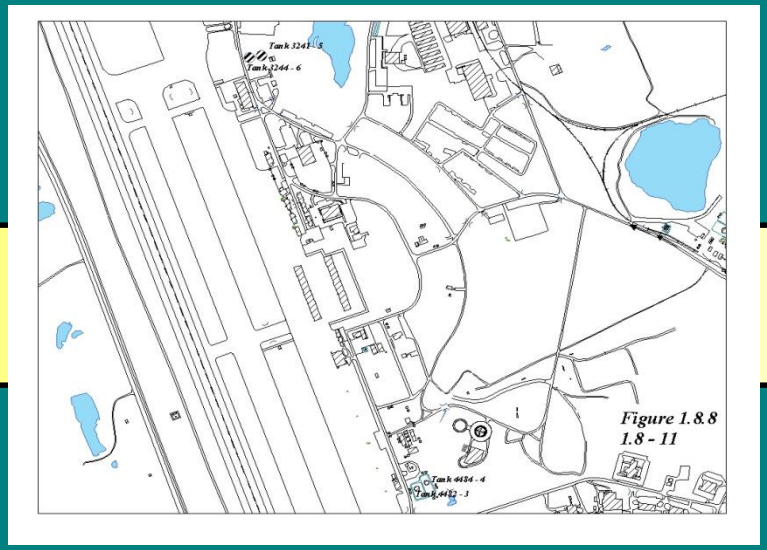
*** At least one exercise per year must be unannounced.**

PREP Triennial Cycle Summary

- Triennial Exercise Expectations per PREP
  - QI notification exercises: 12
  - Tabletop exercises: 3, with 1 at WCD planning level
  - Unannounced exercises: 3, any of the exercises except QI notification exercises.
  - Equipment deployment exercises:
    - For facility-owned and operated equipment (small discharge planning level): 6
    - For OSRO-dependent facilities at all planning levels: 3
  - Triennial exercise of all plan components
    - Outlined in Appendix B to PREP guidelines
    - 15 core components
    - Protection components outlined in No. 8
- 5-yr records retention requirement should reveal if facility is following the triennial cycle.

§112.20(h)(8)
§112.21(c)
Appendix F, Sec 1.8

1.9 Diagrams



Diagrams

- Site plan diagram
- Drainage diagram
- Evacuation plan
- Other diagrams (i.e., containment/boom diagrams), as appropriate

§112.20(h)(9)
Appendix F, Sec 1.9

Diagrams

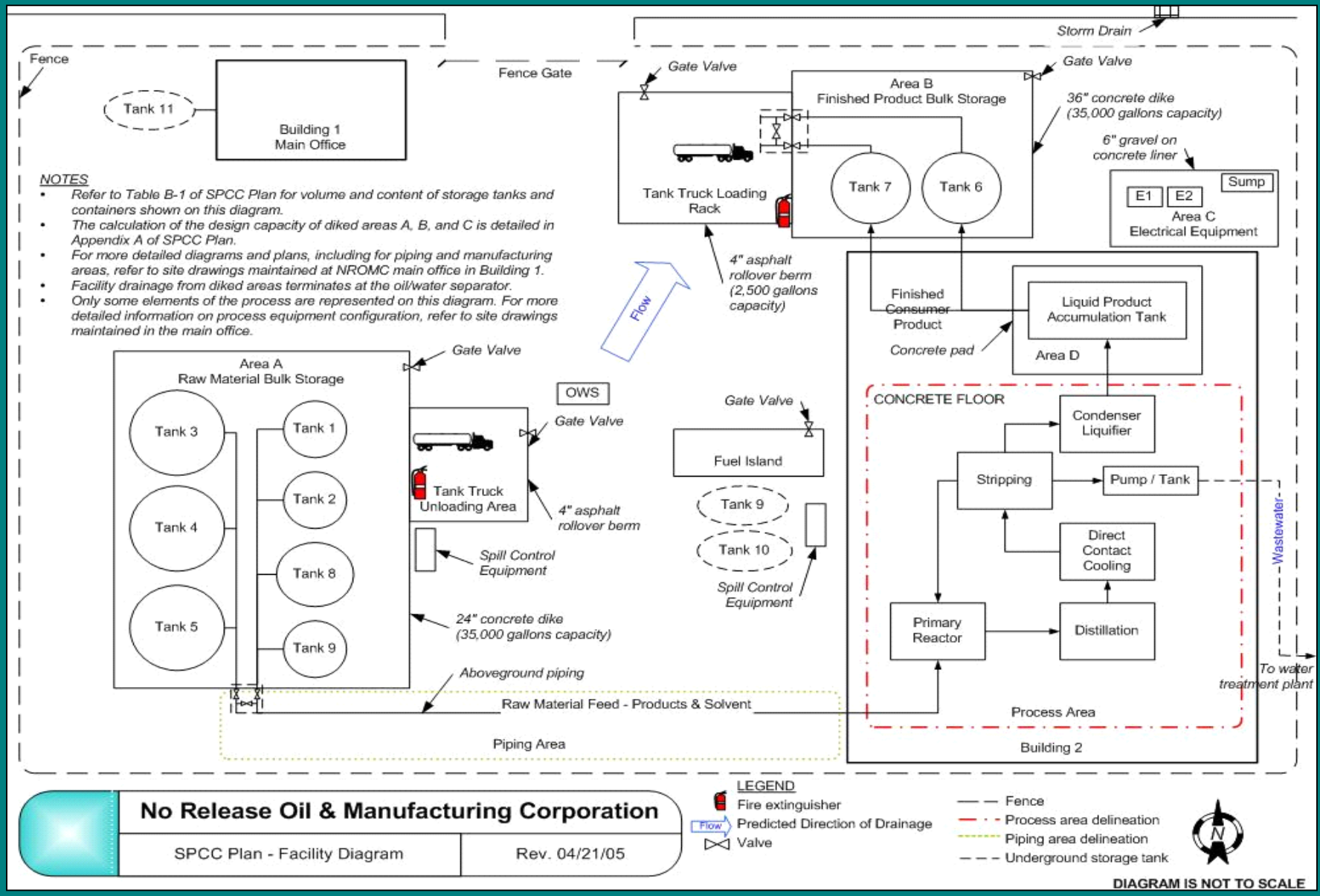
- Site plan diagram includes and identifies:
  - Entire facility to scale
  - ASTs, USTs, drum storage areas, process buildings, transfer areas, and electrical equipment containing oil
  - Contents and capacities of bulk oil storage tanks, drum storage sites, and surface impoundments
  - Secondary containment systems (location and capacity)
  - Hazardous material storage sites (including materials stored and capacity
  - Locations of communication equipment and emergency response equipment
  - The interface between EPA regulated facilities and the portion regulated by other agencies (for complexes only)

§112.20(h)(9)
Appendix F, Sec 1.9

Diagrams

- Site drainage plan diagram includes (as appropriate):
  - Sanitary and storm sewers, manholes and drains
  - Weirs and shut-off valves
  - Surface water receiving streams
  - Fire fighting water supply
  - Response personnel ingress and egress
  - Response equipment transportation routes
  - Direction of discharge flow from discharge points

§112.20(h)(9)
Appendix F, Sec 1.9

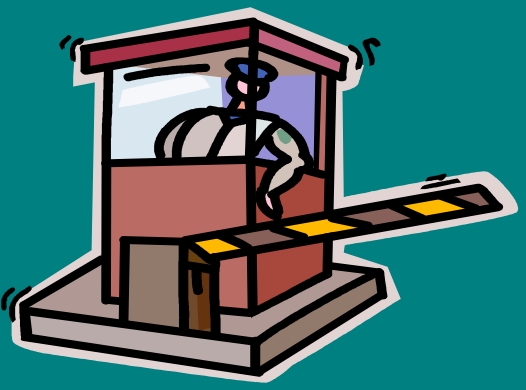

Storm Drain
Fence
Fence Gate
Tank 11
Building 1
Main Office
Gate Valve
Area B
Finished Product Bulk Storage
Gate Valve
36" concrete dike
(35,000 gallons capacity)
6" gravel on
concrete liner
Sump
E1
E2
Area C
Electrical Equipment
Tank Truck Loading
Rack
Tank 7
Tank 6
4" asphalt
rollover berm
(2,500 gallons
capacity)
Flow
NOTES
Refer to Table B-1 of SPCC Plan for volume and content of storage tanks and containers shown on this diagram.
The calculation of the design capacity of diked areas A, B, and C is detailed in Appendix A of SPCC Plan.
For more detailed diagrams and plans, including for piping and manufacturing areas, refer to site drawings maintained at NROMC main office in Building 1.
Facility drainage from diked areas terminates at the oil/water separator.
Only some elements of the process are represented on this diagram. For more detailed information on process equipment configuration, refer to site drawings maintained in the main office.
Finished
Consumer
Product
Liquid Product
Accumulation Tank
Concrete pad
Area D
Area A
Raw Material Bulk Storage
Gate Valve
OWS
Gate Valve
Gate Valve
CONCRETE FLOOR
Condenser
Liquifier
Tank 3
Tank 1
Tank 4
Tank 2
Tank 8
Tank 5
Tank 9
Tank Truck
Unloading Area
4" asphalt
rollover berm
Fuel Island
Tank 9
Tank 10
Stripping
Pump / Tank
Direct
Contact
Cooling
Wastewater
Spill Control
Equipment
Spill Control
Equipment
24" concrete dike
(35,000 gallons capacity)
Primary
Reactor
Distillation
Aboveground piping
To water
treatment plant
Raw Material Feed - Products & Solvent
Process Area
Piping Area
Building 2
No Release Oil & Manufacturing Corporation
SPCC Plan - Facility Diagram
Rev. 04/21/05
LEGEND
Fire extinguisher
Predicted Direction of Drainage
Valve
Fence
Process area delineation
Piping area delineation
Underground storage tank
N
DIAGRAM IS NOT TO SCALE

Diagrams

- Site evacuation plan diagram includes:
  - Evacuation routes
  - Location of regrouping areas

§112.20(h)(9)
Appendix F, Sec 1.9

1.10 Security



Security Systems

- Plan must cover:
  - Emergency cut-off locations
  - Enclosures
  - Guards and their duties for both the day and night shifts
  - Lighting
  - Valves and pump locks
  - Pipeline connection caps
- SPCC Plan requires similar information; duplicate information may be copied and included in this section

§112.20(h)(10)
Appendix F, Sec 1.10

2.0 Response Plan Cover Sheet

Response Plan Cover Sheet

- Template of the response Plan cover sheet is included in Section 2 of Appendix F
- Provides basic information concerning the facility, including:
  - General facility information: owner/operator, name, address, location, largest AST capacity, number of ASTs, North American Industry Classification System (NAICS) sector, maximum storage capacity, worst case discharge amount, distance to navigable water
  - Applicability of substantial harm criteria
  - Certification (and signature) by owner/operator that the information provided is true, accurate, and complete

§112.20(h)(11)
Appendix F, Sec 2

Plan Submittal

- FRPs are required to submitted to applicable EPA Regional office.
- EPA reviews the plan against rule requirements, including Appendix F
- EPA approves plans for significant and substantial harm facilities

Plan Review and Next Steps

- EPA will correspond with the facility if there are any plan deficiencies to correct.
- For sig/sub harm facilities, EPA will issue an approval letter.
- Prior to approval, EPA may inspect the facility.
- EPA may also inspect the facility and/or conduct an exercise after a plan has been submitted.
- EPA may also inspect and/or conduct an exercise after a significant change to the FRP.

Maintenance of an FRP

- Owner or operator must revise and resubmit revised portions of the FRP within 60 days of each facility change that may materially affect the response to a worst case discharge
- Material change examples:
  - Change in the facility configuration that alters information in the FRP
  - Change in the type of oil handled, stored or transferred that affects the required response resources
  - Material change in the capabilities of the oil spill removal organization (OSRO) that provides response equipment and personnel
  - Material change in the facility's oil spill prevention and response equipment or emergency response procedures

§112.20(d)(1)

Maintenance of an FRP *(continued)*

- Amendments to the following do not require approval by the RA:
  - Personnel and telephone number lists
  - Change in the OSRO that does not result in a material change in support capabilities
- Facility owners or operators shall provide a copy of such changes to the RA

§112.20(d)(2)

U.S. EPA Region VII Superfund Emergency Response (courtesy of Joe Davis and Paul Doherty; adapted by EPA OEM)

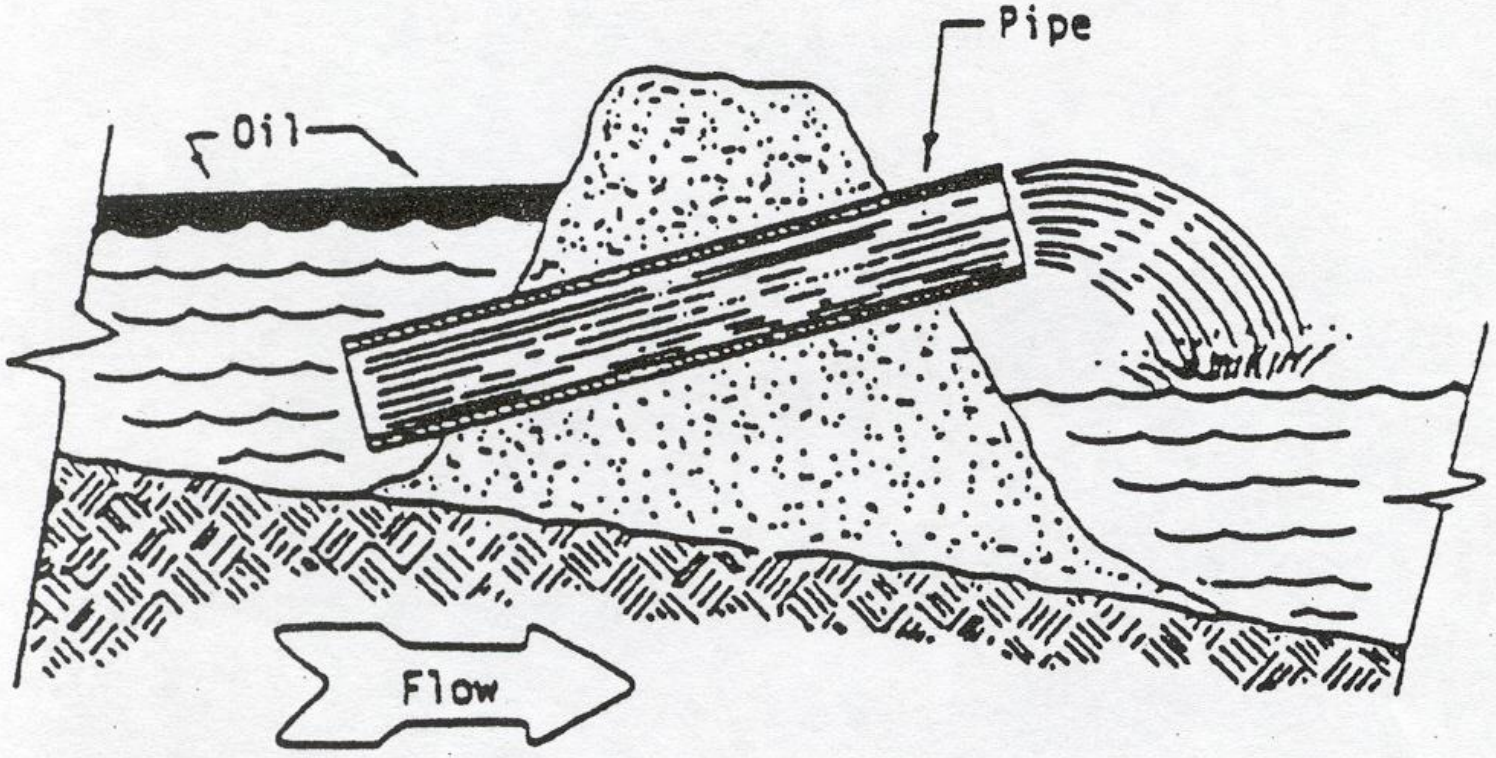
UNDER-FLOW DAMS

Design and Construction

Theory of Operation

- **In small creeks and drainage ways an under-flow dam can be constructed to contain free floating oil and allow uncontaminated water to pass through the dam.**
- **The design consists of a length of pipe or culvert placed parallel to the direction of water flow with the upstream end lower then the downstream end. The dam can be constructed with sand bags, shovels, or heavy digging equipment.**

Under-flow dams are sometimes called siphon dams



Construction Considerations

- The pipe must be large enough and positioned correctly to allow water to pass without backing up to a depth greater then the dam or surrounding banks.
- Several pipes at various depths or side by side may be used in the dam to carry the required flow.
- An alternate method is to add a valve on the downstream side or a “T” on the upstream side of a level pipe to control the water level.
- Existing culverts can be utilized at some locations along a creek by damming the creek downstream and thereby raising the water level above the top of the culvert

Design Resources

- Consulting companies can provide plan holders with design worksheets and other resources to help in developing the underflow dam response scenario.

- Example is underflow dam worksheet by ESCO (Elemental Services & Consulting, Inc.) in their Oil Spill Job Aids manual (*not an endorsement*).

UNDERFLOW / OVERFLOW / THROUGHFLOW DAM WORKSHEET

Accessories needed: ***scientific calculator****, wax pencil*

NOTE: Be sure feet vs. inches convention is consistent throughout all equations.

Type of Channel *(from Stream Channel Profile Worksheet)*

☐ - Rectangular ☐ - Trapezoidal ☐ - Triangular ☐ - Circul ☐ - Other

Channel Area: _____ ☐ - Total Area ☐ - Flow Area
(square feet)

Channel Velocity

Knots: _____ **× 101.27 =** _____ Channel Velocity *(ft/min)*
(knots to ft/min conversion)

Channel flow rate in CUBIC FEET per minute ***(ft^3/min)***

_____ × _____ = _____
Channel Velocity *(ft/min)* Cha l Area (Water Flow Rate *(ft^3/min)*

Dam Throughput

*Available Pipe Siz _____ Pipe Diameter^2: _____
(inches) Pipe Diameter squared *(inches)*

Materials and Equipment

Materials:

- **Native materials:**
  - **Earth (soil)**
  - **Rock**
  - **Sand**
- **Imported materials:**
  - **Same stuff**
- **Types of pipe:**
  - **Corrugated steel pipe**
  - **Hard PVC pipe**
  - **Flexible corrugated plastic pipe**

Materials and Equipment

Equipment:

- **Shovels**
- **Excavators**
- **Bulldozers**
- **Bobcat**
- **Absorbent boom**
- **Vacuum trucks**
- **Pumps and hoses**

Questions