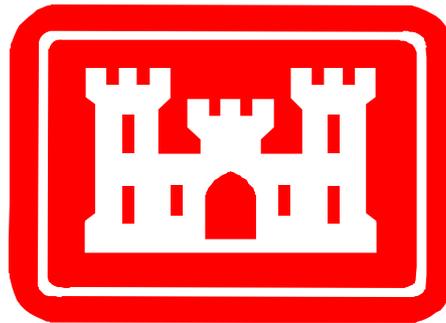

Environmental Windows as a Risk Management Practice



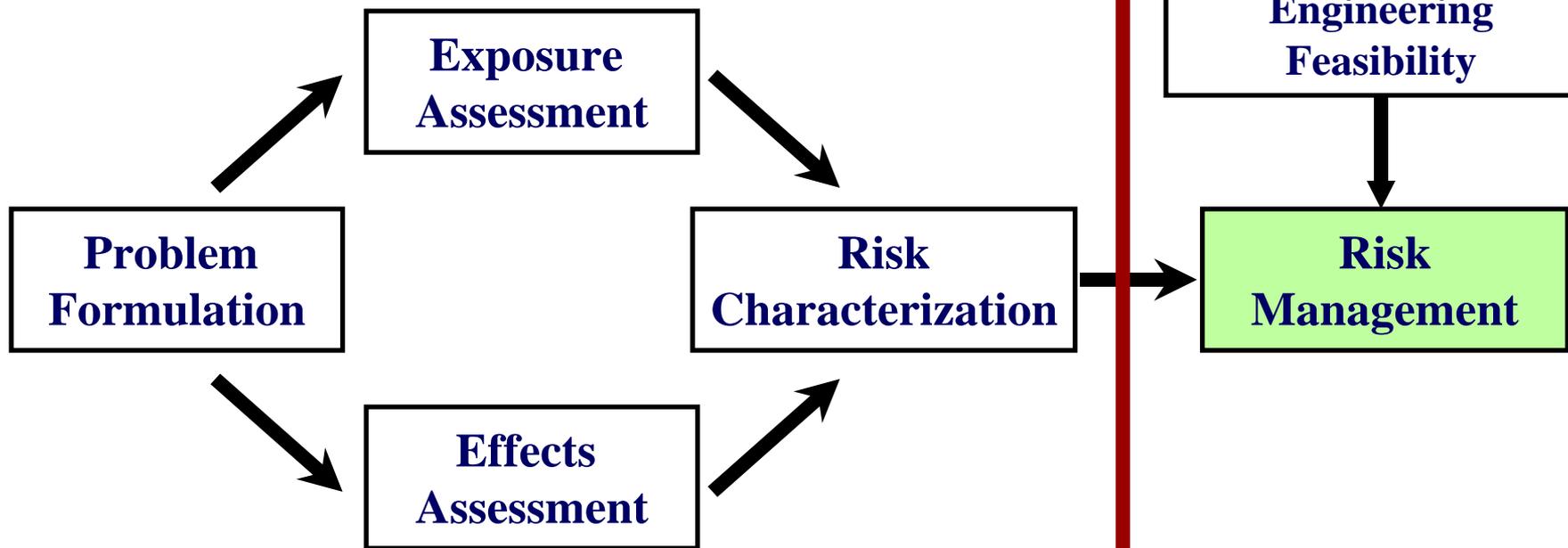
Doug Clarke

Douglas.G.Clarke@usace.army.mil



RISK FRAMEWORK

RISK ASSESSMENT PARADIGM



$$\text{Risk} = f(\text{Exposure} + \text{Effect})$$



Environmental Window - a period during which dredging may occur

Seasonal Restriction - a period during which dredging is not allowed



AUTHORITIES

Federal Consistency Requirements

Clean Water Act

Fish & Wildlife Coordination Act

Environmental Window

Endangered Species Act
Biological Opinions

Essential Fish Habitat

Section 401 Water Quality Certification



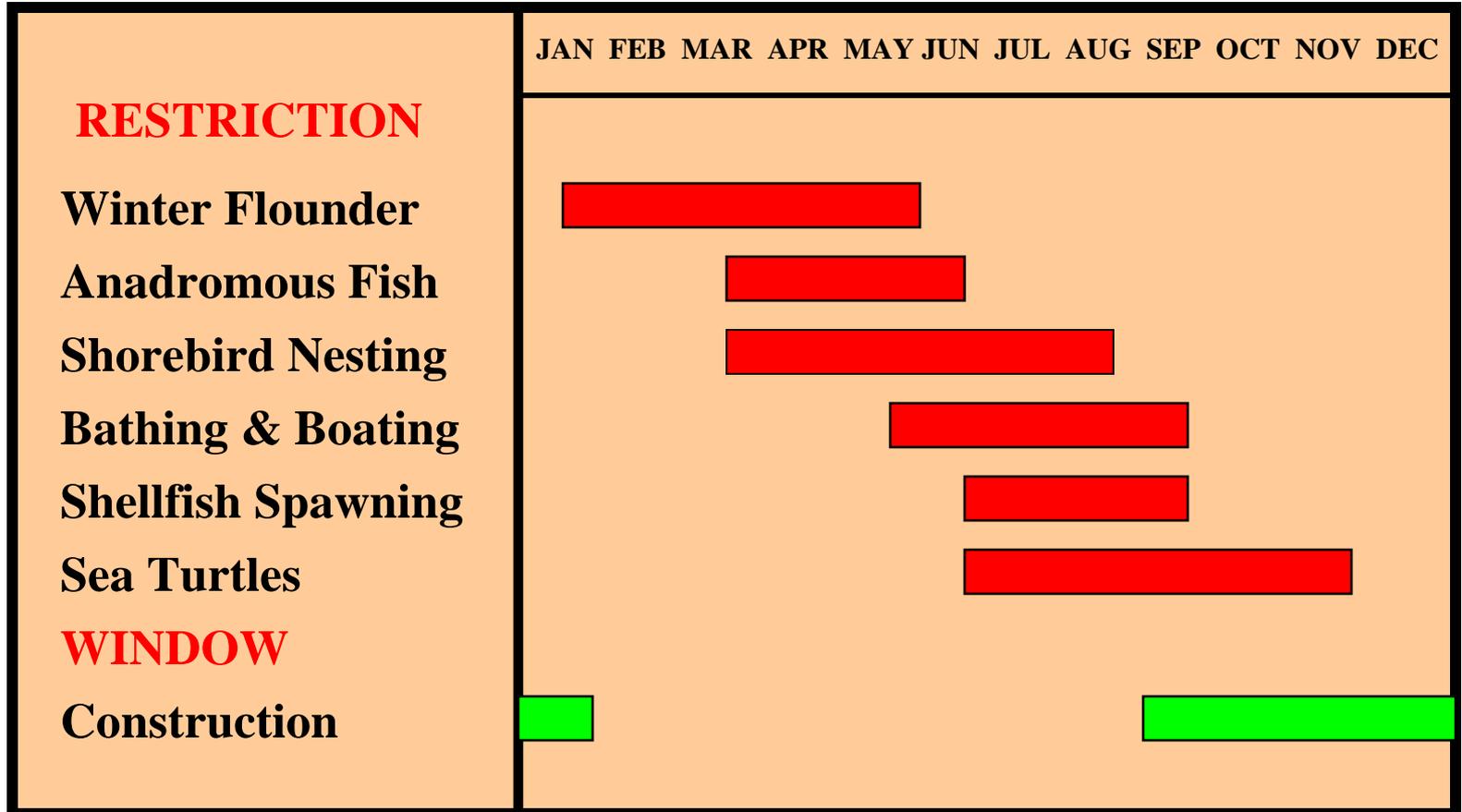
Issues That Lead to Windows

- **Contaminated Sediments**
- **Sediment re-suspension effects**
 - **Turbidity**
 - **Total Suspended Solids**
- **Hydraulic entrainment**
- **Sedimentation effects**
- **Noise**
- **T&E species protection**



CUMULATIVE WINDOWS

EXAMPLE: HYANNIS HARBOR, MA PROJECT FILE



Cost Inflation

- **Windows tend to restrict dredging to winter months**
 - **Dredge availability**
 - **Competition**
 - **Safety issues**
 - **Higher fuel costs**
 - **Higher mobilization/demobilization costs**
 - **Crew “down time”**
 - **Inflexible contracting**
 - **Contracting delays**
 - **Contentious interagency coordination**



The Precautionary Principle

- ***Invoked by both state and Federal regulators***
- ***When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause-and-effect relationships are not fully established scientifically.****

***from the 1998 Wingspread Statement**



The Precautionary Principle in Practice

- The PP is intended to be a *risk-adverse* approach and endorses *adaptive* management practices
- Under the PP, precautions are intended to be *preliminary* measures pending completion of risk assessment
- Precautions are *not an endpoint*, but a *starting point* in a search for alternatives
- The applied precaution should be proportional to the degree of risk



Current Practice

- **Since passage of NEPA environmental windows have become a pervasive management practice applied as a “first line of defense”**
- **Frequently an EW is stipulated in the WQC in tandem with other turbidity/TSS controls**
- **Institutionalized EWs are seldom re-evaluated or refined based on objectively determined levels of risk**
- **The applied precaution should be proportional to the degree of risk**
- **An environmental window is an off switch, not a dimmer switch. By default applying a window infers that no risk is acceptable.**



“BEST” or “BAD” Management Practice?

**DEPLOY SILT
CURTAIN**

**SLOW HOIST
SPEED**

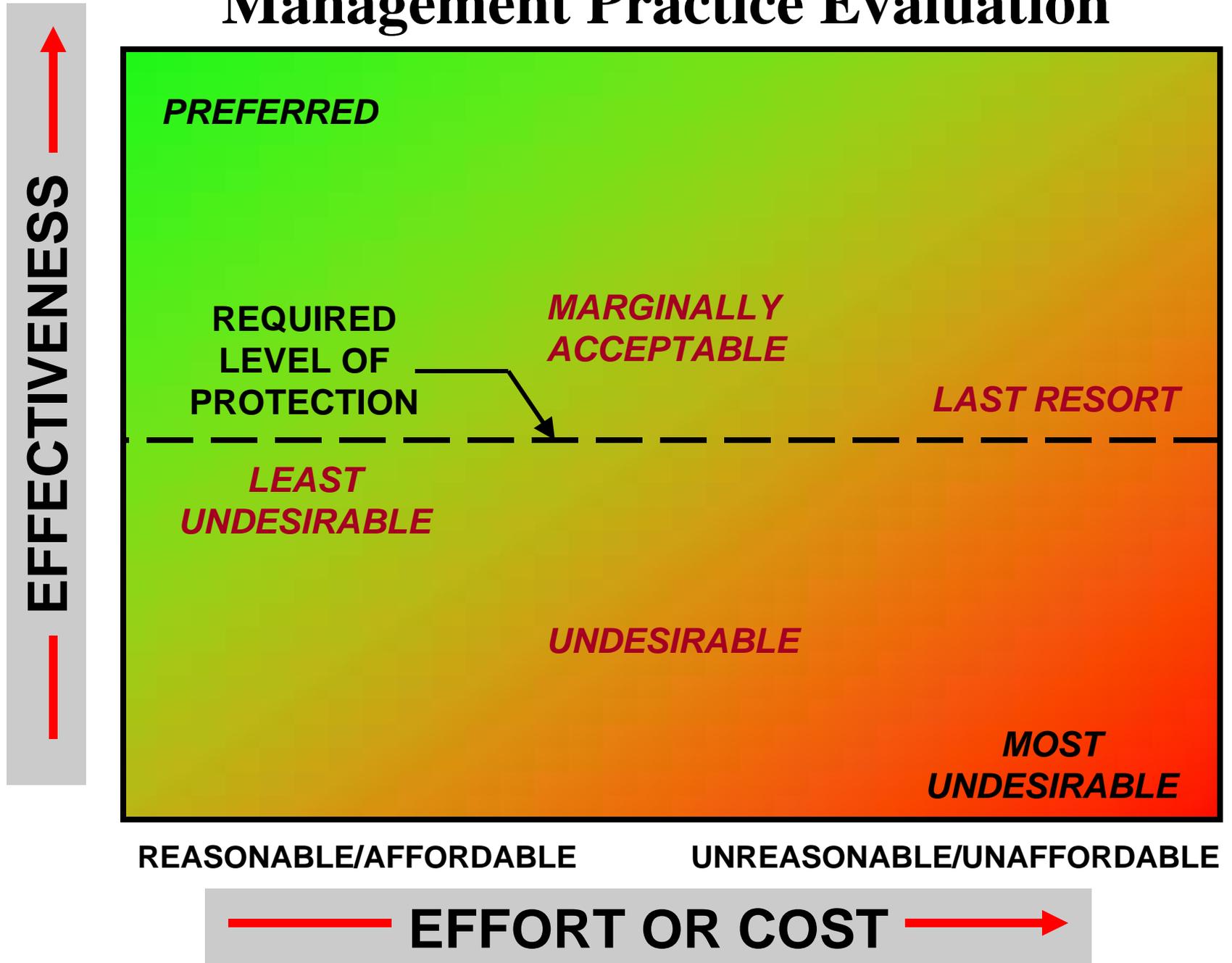
**USE CLOSED
BUCKET**

**ENVIRONMENTAL
WINDOW**

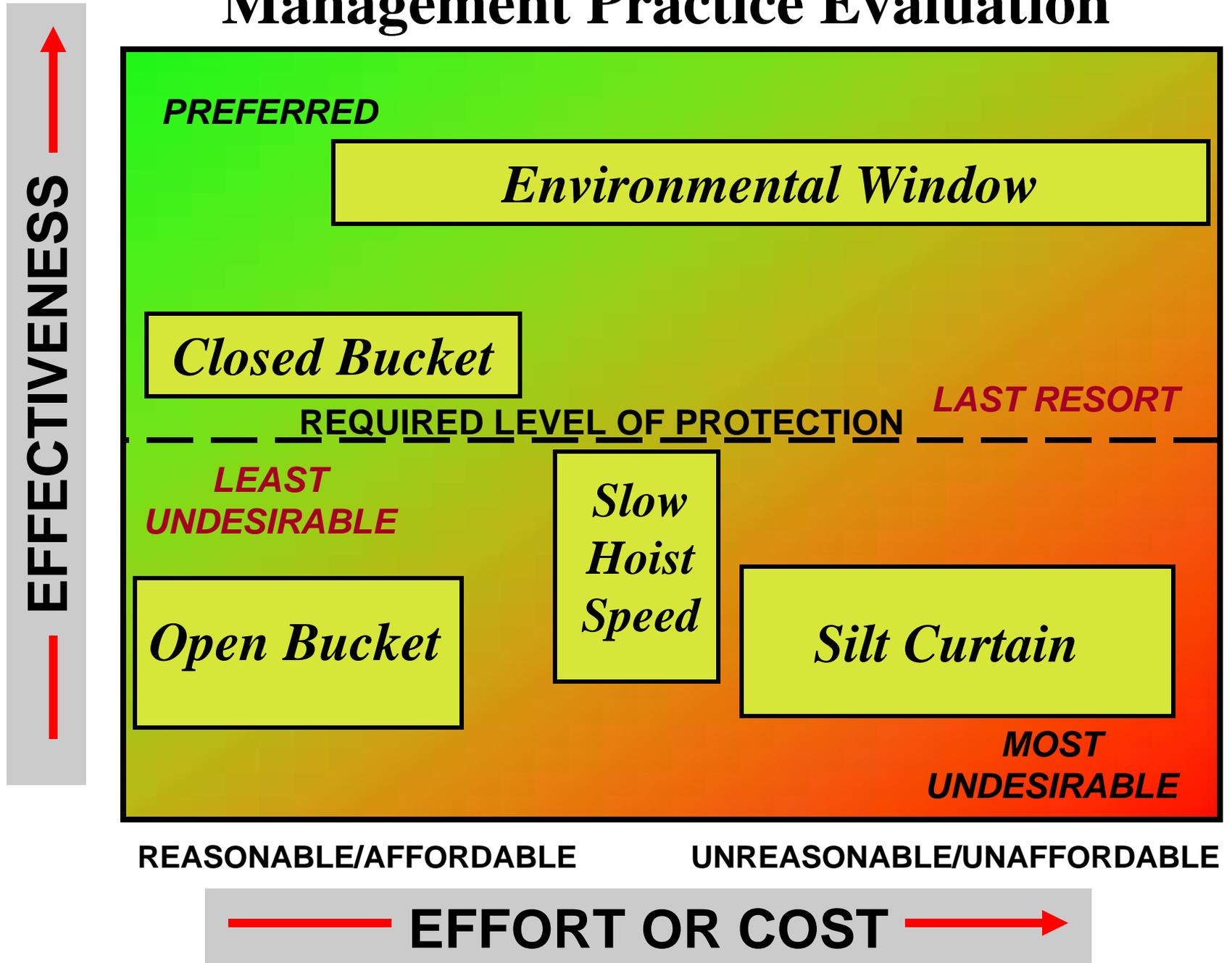
PERCEIVED RISK



Management Practice Evaluation



Management Practice Evaluation



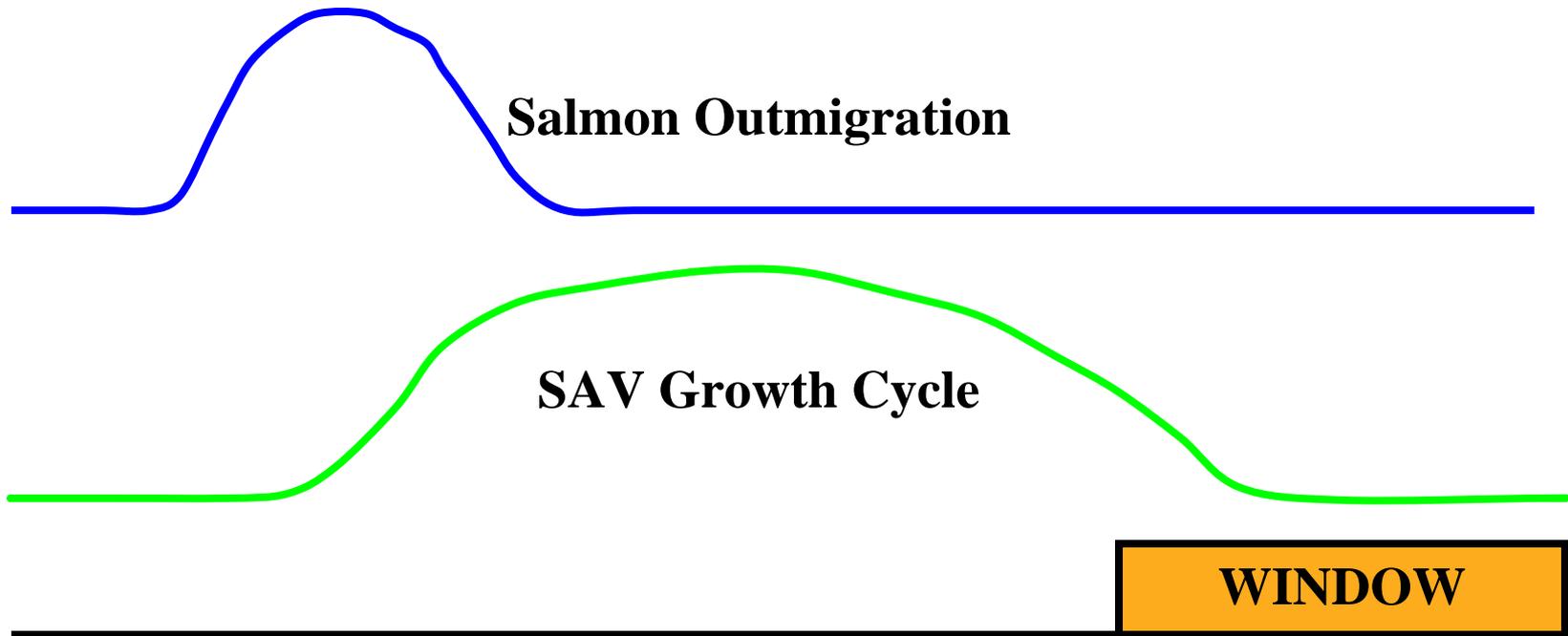
Hypothetical Example

SPRING

SUMMER

FALL

WINTER



RISK-INFORMED DECISIONS

- ***Biology***

- Life history stage
- Habitat
- Seasonality
- Vulnerability

- ***Dredging***

- Type
- Performance
- Waterway
- Temporal/Spatial Scales



National Research Council

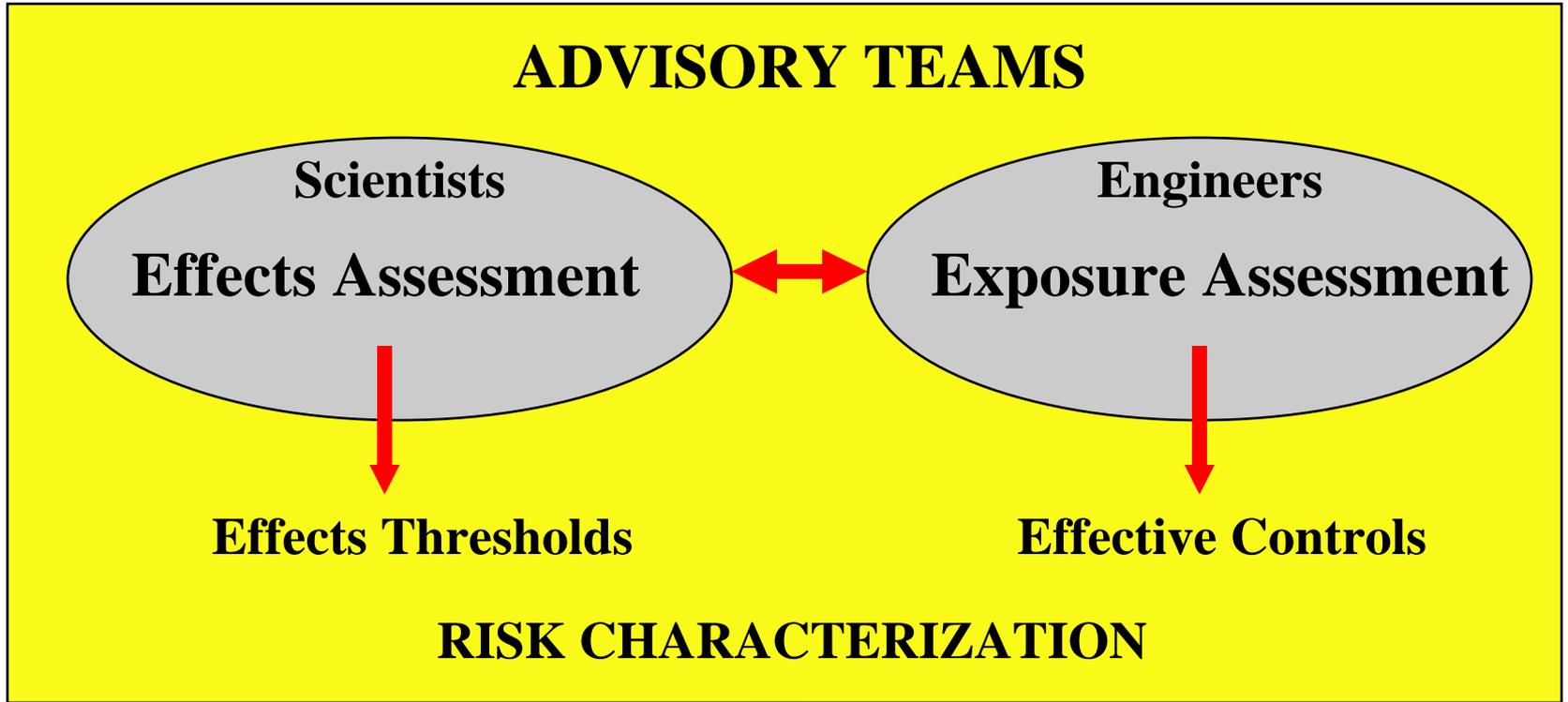
2001

**A Process for Setting, Managing, and
Monitoring Environmental Windows**





STEP 3



STEP 4



REQUIRED!!!

STEP 6

**REFINE
WINDOW**



**ADAPTIVE
MONITORING**



DREDGE

STEP 5

Pitfalls in the Present System

- **Burden of proof of acceptable risk lies on the dredging community, but targets are fuzzy**
- **Often weak documentation of effects**
- **A majority of resource agencies do not have staff dedicated to the dredging process**
- **Resource agencies have insufficient funds for dredging research or training**
- **Little incentive exists to change the status quo**



Recommendations

- **Consider all management practices on an equal basis with windows (e.g., silt curtains, closed buckets, buffer zones, etc.)**
- **Accept windows as a potentially useful tool based on the merits of a given project and specific sources of risk**
- **Do not institutionalize windows, but invest in development of alternatives**



Recommendations

- **Seek science-based, adaptive alternatives**
- **Obtain commitments to resolve major concerns**
- **Explore ecological risk-based methods to setting windows**
- **Increase understanding of the dredging process**
- **Increase awareness of conservation needs among dredgers**



Conclusions

- **Environmental windows as commonly implemented are a non-adaptive management practice and represent an imperfect application of the precautionary principle**
- **Progress beyond a perfunctory acceptance of windows as the management practice of first resort requires commitment from all stakeholders**

