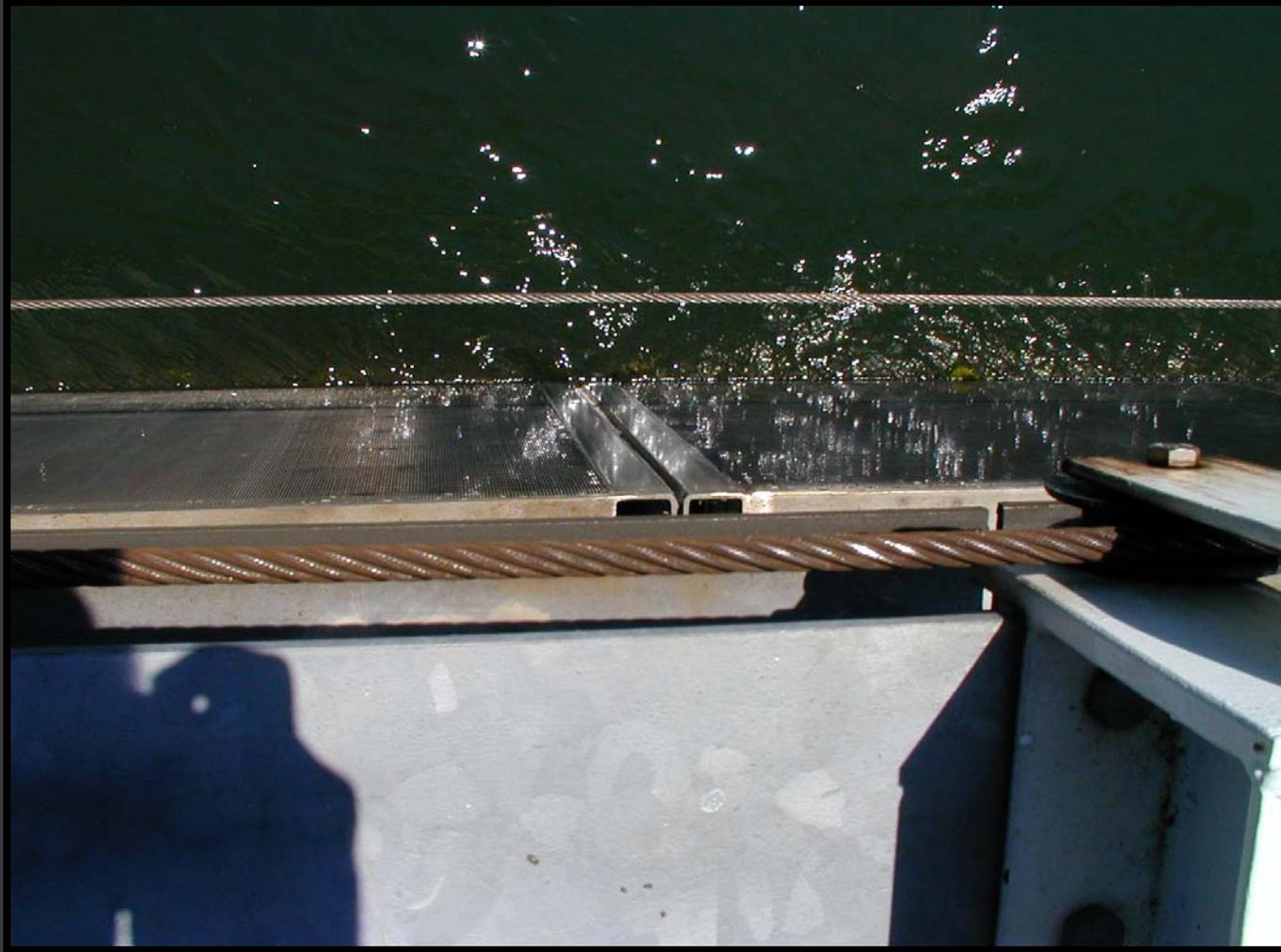


# Vertical Fixed Plate Screens



# Vertical Fixed Plate Screens



# Vertical Fixed Plate Screens



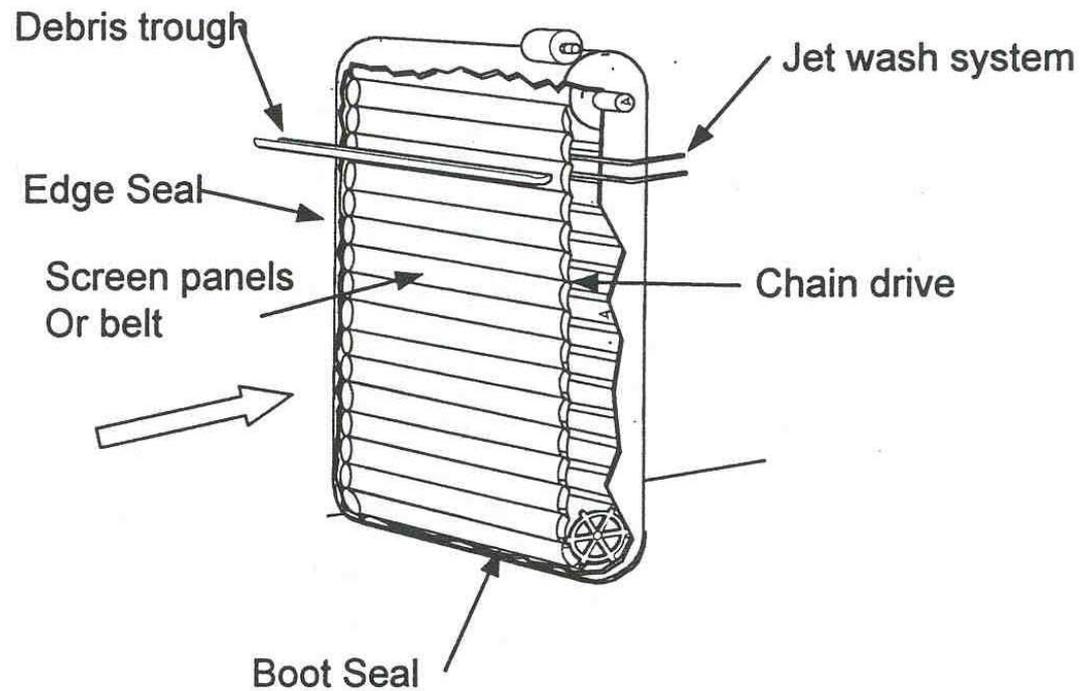
# Vertical Fixed Plate Screens - Advantages

- ⦿ **Easy to seal**
- ⦿ **Mechanically simple**
- ⦿ **Can be installed on river's edge - small screens**
  - **No bypass required**
  - **Can use profile wire (very strong)**
- ⦿ **Mechanical/brush cleaning or back spray usually effective**
- ⦿ **High pressure air burst cleaning system is on back side of screen.**
- ⦿ **Cleaning is started by timer or head loss.**

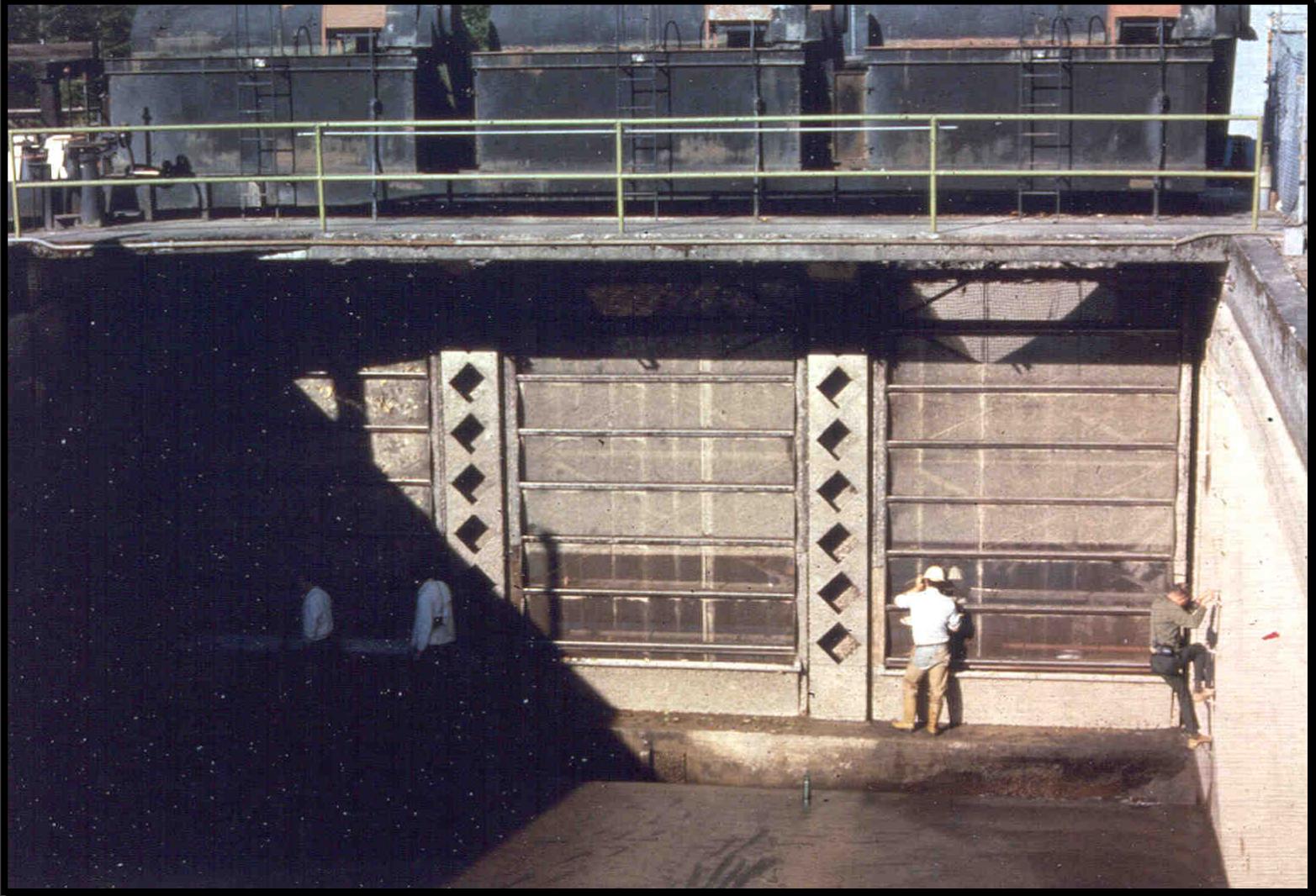
# Vertical Fixed Plate Screens - Disadvantages

- ⦿ **Must be cleaned mechanically**
- ⦿ **Large bypass flows required**
- ⦿ **Brush arms can be damaged by large debris.**
- ⦿ **Circular water back spray cleaners do not clean entire screen.**

# Vertical Traveling Screens



# Traveling Screens



# Traveling Screens



# Traveling Screens



# Traveling Screens



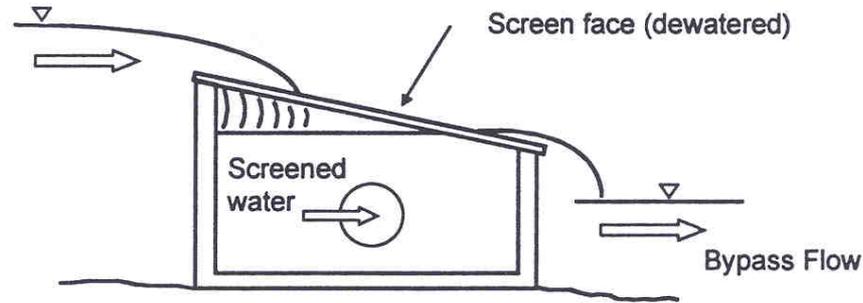
# Traveling Screens - Advantages

- ① **Small screens can be installed on river.**
- ① **Compact civil works**
- ① **Self cleaned by rotation**
- ① **Jet sprays provide additional cleaning.**

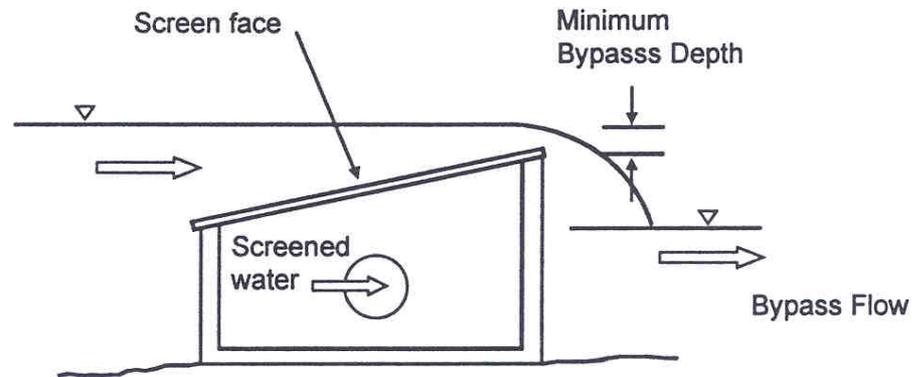
# Traveling Screens - Disadvantages

- ⦿ **Mechanically complex**
- ⦿ **Seals can be a problem.**
- ⦿ **Make sure meets all NMFS criteria.**
- ⦿ **Can have problems with sediment build up and subsequent seal wear or mechanical breakdown.**

# Non-Vertical Fixed Plate Screen

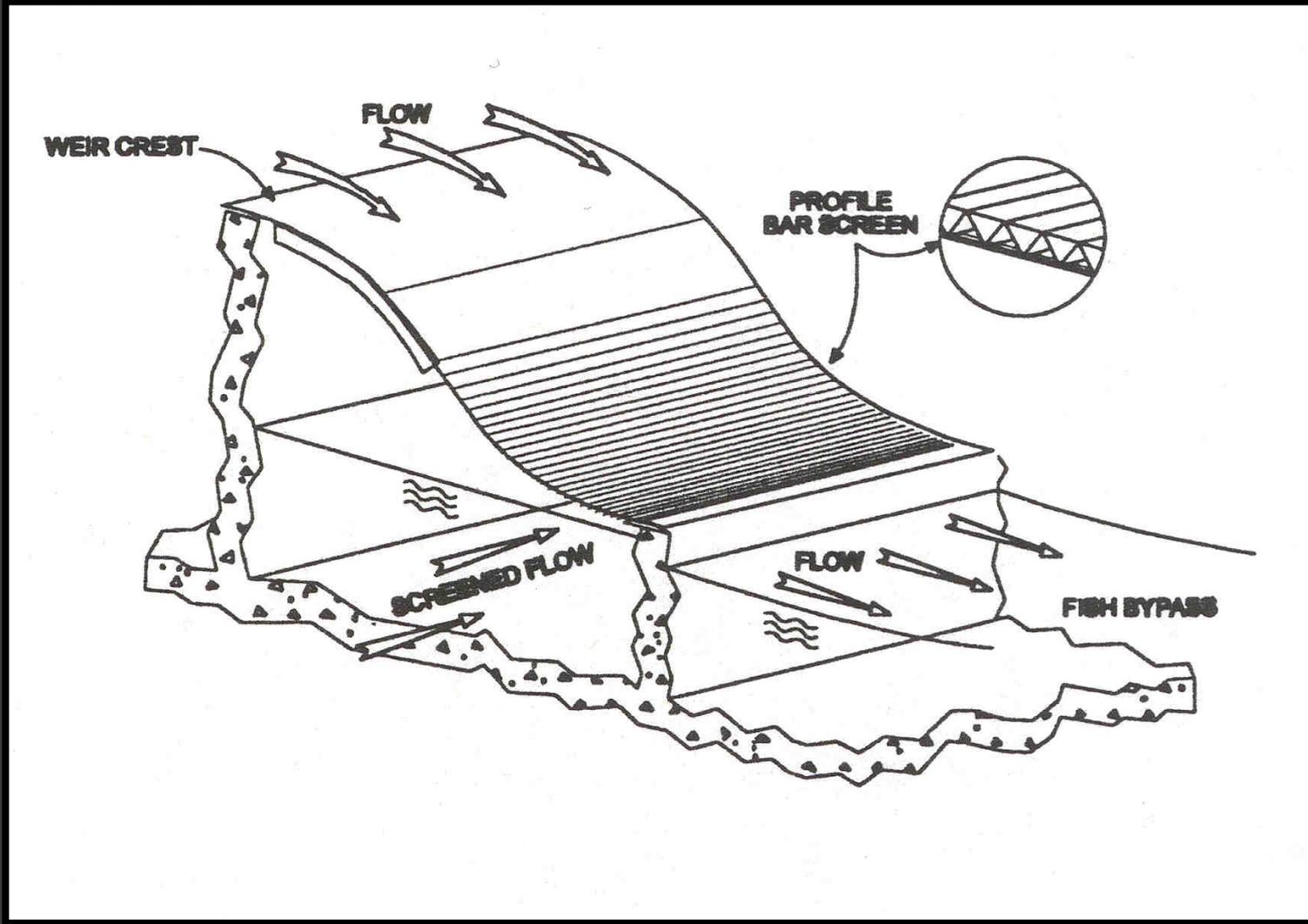


Downward Sloping Flat Plate Screen



Upward Sloping Flat Plate Screen

# Non-Vertical Fixed Plate Screen



# Non-Vertical Fixed Plate Screens



# Non-Vertical Flat Plate Screens



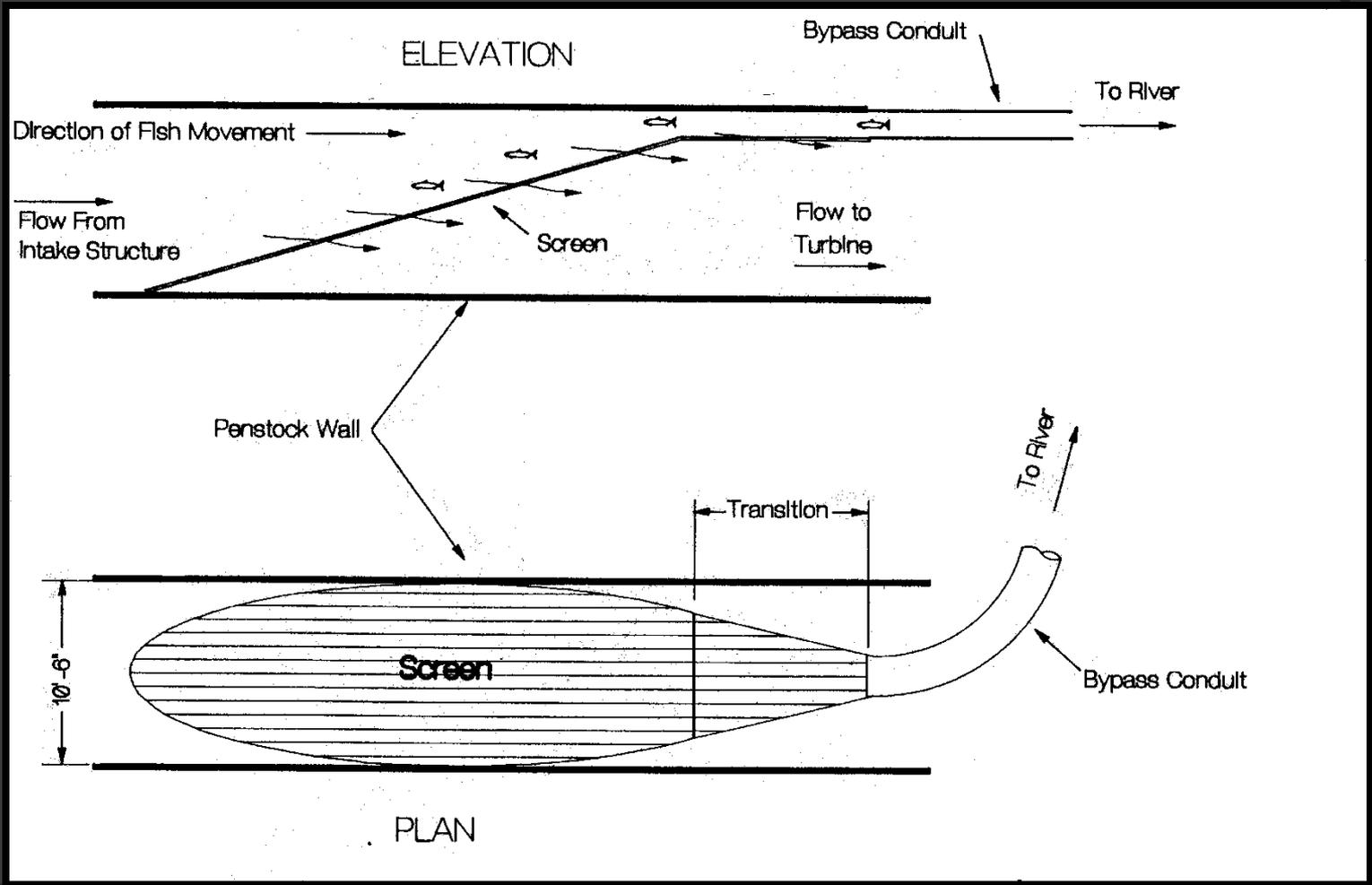
# Non-Vertical Fixed Plate Screens - Advantages

- ① **No moving parts**
- ① **No bypass required if built in-river**

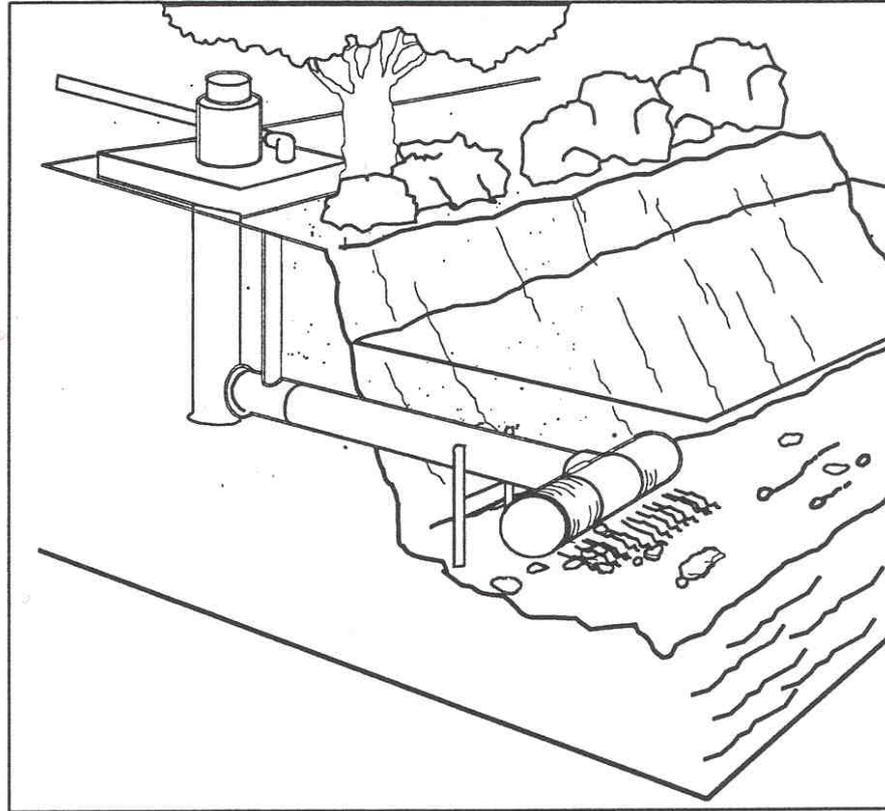
# Non-Vertical Fixed Plate Screens - Disadvantages

- ⦿ **Self-cleaning may not be reliable**
- ⦿ **Risk of injury on screen during low flow**
- ⦿ **Must raise water surface**
- ⦿ **Tricky, unreliable flow rate control**
- ⦿ **Adult passage concerns**
- ⦿ **Difficult to balance flow and approach velocity.**

# Eicher Screens and Modular Inclined Screens



# End-Of-Pipe Screens



End-of-pipe Screens (Fixed Drum, Tee Screens)

# Fixed Cylinder Screens



Source: Johnson Screens, Inc..

# Fixed Cylindrical Screens - Advantages

- **Good option for deep intakes**
- **Air burst cleaning system can be made to be effective**
- **Some off-the-shelf models with water backwash systems meet NMFS criteria for active screens.**

# Fixed Cylindrical Screens - Disadvantages

- ⦿ **Out of sight, out of mind**
- ⦿ **Need current to transport debris from screen site.**
- ⦿ **Air burst systems on large installations don't always clean entire screen - especially the bottom.**
- ⦿ **Long, stringy vegetation is a problem on small pump screens.**

# Pump Screens

