THE LIFE CYCLE OF OWTS INSTALLATION

KIM SEIPP, NAWT

INTRODUCTIONS

- NAWT –
  - NATIONAL ASSOCIATION OF WASTEWATER TECHNICIANS
- KIM SEIPP
  - HIGH PLAINS SANITATION SERVICE – OWNER
  - NAWT – EDUCATIONAL COORDINATOR
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The material being presented does not reflect the opinions of NOWRA

NAWT TRACK PLAN FOR TODAY

- Introduction – Life Cycle & Principles of OWTS
- Beginning of the Life Cycle – Design Principles
- Beginning & Early Life – Installation Principles
- Mid-Life – Operations & Maintenance Princi
- Mid-Life – Inspection
- All during the Life – R rinciples
- After Life - ment Principles
- hy we care and where we go from here

Mid-Life – Operations & Maintenance Principles

- Introduction to Operations & Maintenance of OWTS
- What is O&M and Why is it Important
- Conventional O&M
- Advanced O&M
- Business of O&M

NAWT – MID-LIFE OPERATIONS & MAINTENANCE PRINCIPLES

Introduction to Operations & Maintenance of OWTS

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WHY DO THIS?

ALL Systems need O&M Service

O&M Service Providers Needed to Perform O&M Activities

Service Providers *MUST* be Trained

- Understand the COMPLETE SYSTEM

NAWT Developed AN O&M Program USING THE MANUAL DEVELOP BY CIDWT to Train Service Providers

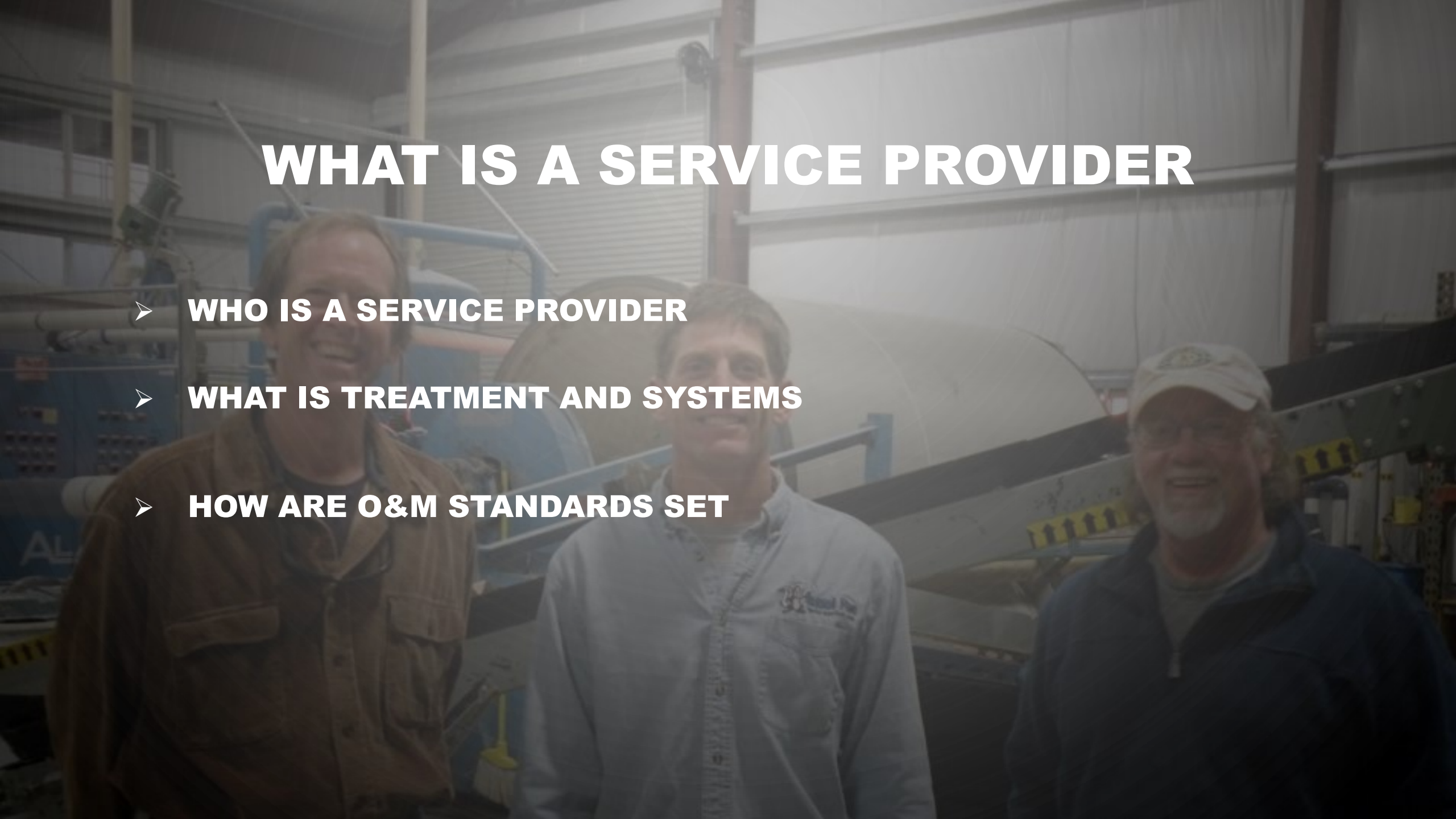
O&M FREQUENCY

RELATED TO THE:

- COMPLEXITY
- TREATMENT PROCESS
- WASTEWATER LOADING
- RISK OF FAILURE

- BEST PERFORMANCE
  - AVERAGE DAILY FLOW < 70% OF DESIGN CAPACITY
- GREATER ATTENTION/MONITORING NEEDED
  - AVERAGE DAILY FLOW > 70% OF DESIGN CAPACITY
    - PEAK FLOWS ARE GREATER THAN THE DESIGN CAPACITY

MINIMUM FREQUENCY MAY BE SET BY REGULATORY AGENCY OR MANUFACTURER



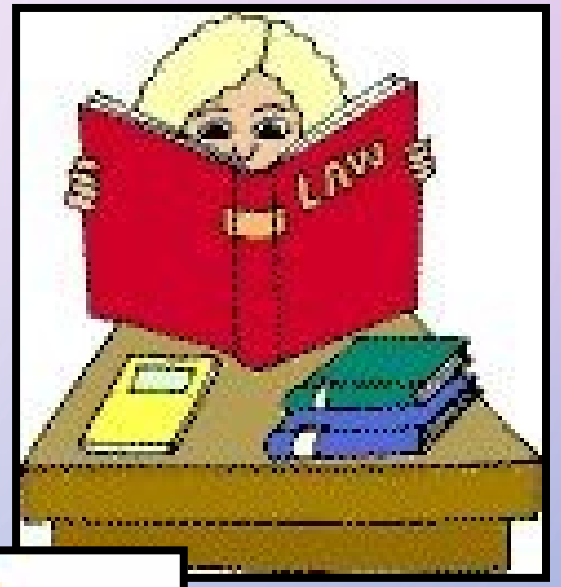
WHAT IS A SERVICE PROVIDER

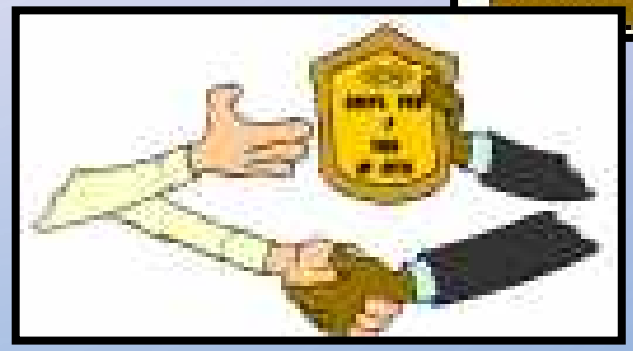
- WHO IS A SERVICE PROVIDER
- WHAT IS TREATMENT AND SYSTEMS
- HOW ARE O&M STANDARDS SET

WHAT IS AN O&M SERVICE PROVIDER?

A PROFRSSIONAL PROVIDING A SERVICE TO THE PUBLIC

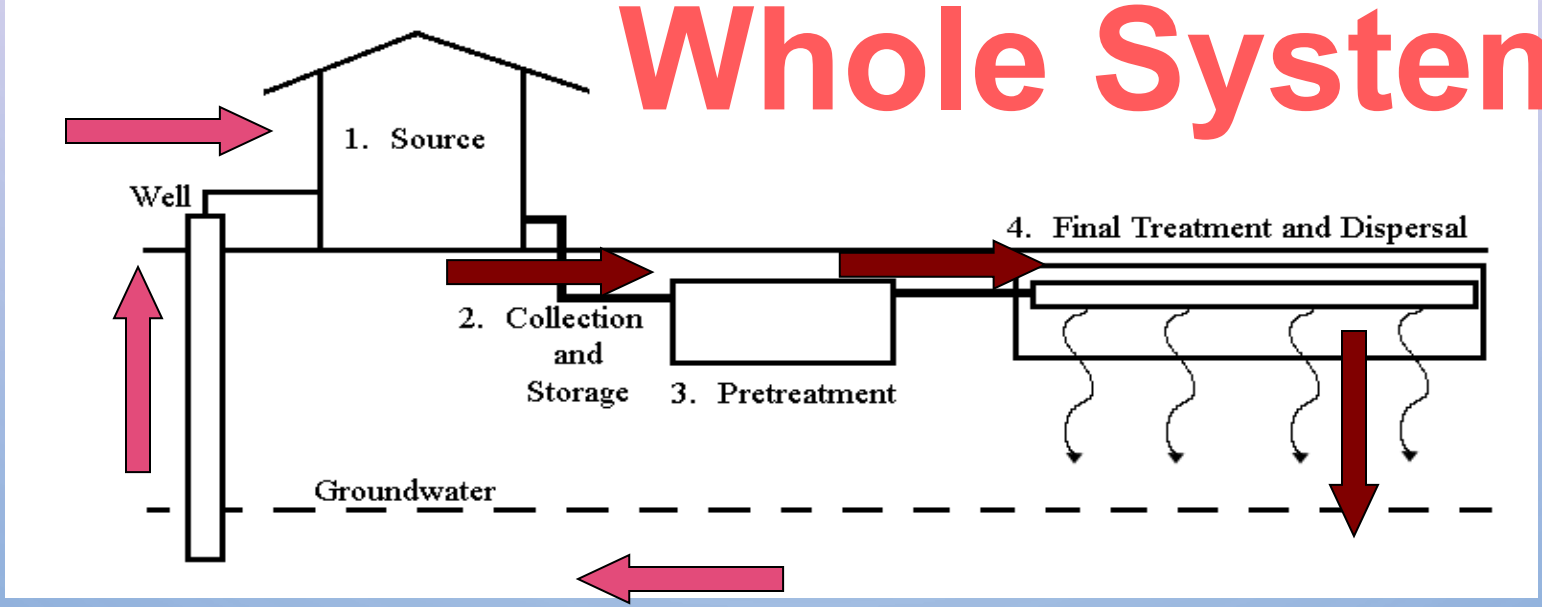
- BODY OF KNOWLEDGE SPECIFICALLY RELATED TO PERFORMING O&M
- STANDARDS FOR ADMISSION (CERTIFICATE EXAM)
- STANDARDS FOR RETENTION (CONTINUING EDUCATION REQUIREMENTS)
- CRITERIA FOR EXPULSON (LOSS OF LICENSE)





WHAT IS AN ONSITE WASTEWATER TREATMENT SYSTEM (OWTS)?

- Wastewater Source
- Collection and Storage
- Pretreatment Components
- Final Treatment and Dispersal Components



STANDARDS OF PRACTICE

- Setting the standard for the industry
- Defining the minimum service to be provided
  - Operational Checklists
- Professionalism
  - Responsibility
  - Professional associations
- Leadership for industry resulting in betterment for all
- Easily destroyed

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WHY PERFORM O&M SERVICE VISITS?

- KEEP SYSTEMS FUNCTIONING PROPERLY
- MAINTAIN EFFLUENT QUALITY
- EARLY DETECTION OF PROBLEMS

WHY IS AN O&M SERVICE PROVIDER PROGRAM IMPORTANT?

- INCREASED USE OF SEPTIC SYSTEMS
- NEED FOR MANAGEMENT
- **STANDARDIZATION OF SERVICES**
  - DEFINE SERVICES TO BE PERFORMED
  - OPERATIONAL CHECKLISTS
- LIABILITY PROTECTION

CUSTOMER SATISFACTION

- SATISFIED IF SYSTEM WORKS
  - ENJOY THE USE OF THEIR PROPERTY
- DISSATISFIED IF SYSTEM DOES NOT WORK
  - COMPLAINTS
    - PERMITTING AUTHORITY
    - STATE AUTHORITY
    - LEGAL
  - TELLS EVERYONE THAT WILL LISTEN

Admiration
Respect

PUBLIC HEALTH

- WASTEWATER CAN CONTAIN DISEASE CAUSING PATHOGENS
  - BACTERIA
  - VIRUSES

BROKEN SYSTEMS CAN IMPACT HEALTH

ENVIRONMENTAL PROTECTION

BROKEN SYSTEMS CAN IMPACT WQ

- **TREAT CONTAMINANTS BEFORE THEY REACH SURFACE OR GROUNDWATER**
  - **NUTRIENTS**
    - **PHOSPHORUS**
    - **NITROGEN**
  - **ORGANIC LOADING**

SYSTEM RELIABILITY

- PERFORMANCE CRITICAL TO TREATMENT
  - COMPONENTS REQUIRE
  - MAINTENANCE
  - SERVICE/MAINTENANCE
  - SHOULD EXTEND LIFE OF
  - COMPONENTS

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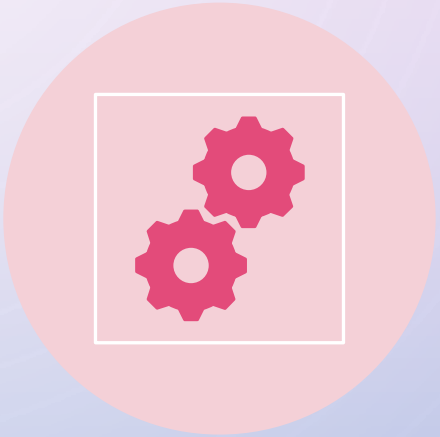
BASIC CONVENTIONAL SYSTEMS

GRAVITY SYSTEM



SIMPLE PUMP SYSTEM

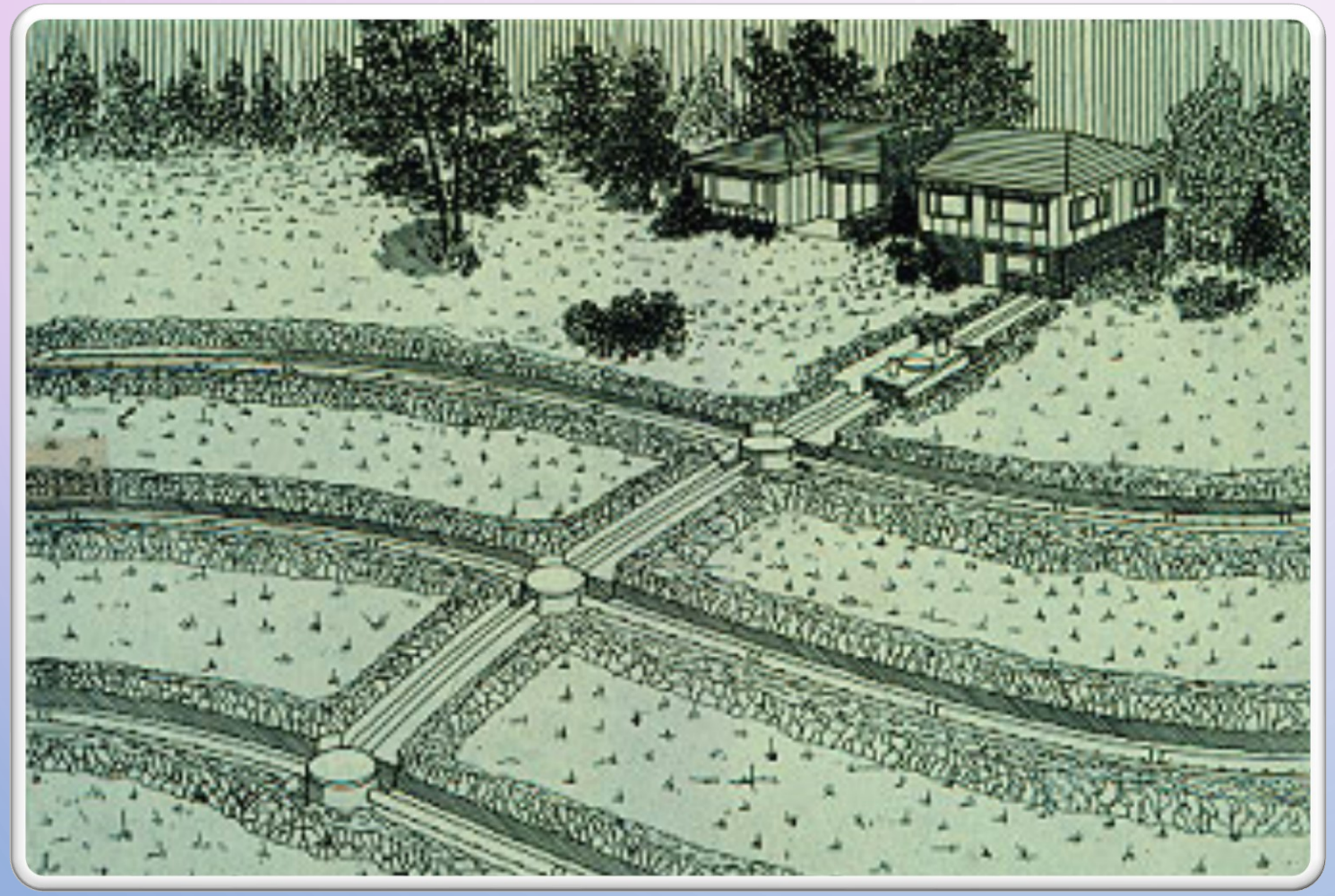
DISTRIBUTION BY GRAVITY

- GRAVITY DRAIN FIELDS
  - SIPHON-TO-GRAVITY & PUMP-TO-GRAVITY SYSTEMS
- THE DEVELOPMENT & IMPORTANCE OF BIOMAT
- IDENTIFY UNACCEPTABLE CONDITIONS IN DRAIN FIELD AREA

ALL SYSTEMS NEED MANAGEMENT

- **THE LEVEL [FREQUENCY] OF MANAGEMENT IS SET BY:**
  - **SITE CONDITIONS – RISKY SITES**
  - **WASTEWATER LOADING TO THE ENVIRONMENT (USE)**
  - **TECHNOLOGY – SYSTEM COMPLEXITY**

How often is a System Checked?



SYSTEM DEFINITION

- **SOIL TREATMENT AREA**
- **(STA)**
- **DRAIN FIELD**
- **LEACH FIELD**
- **OTHER…….**

DISTRIBUTION MEDIA

- WHAT'S THE DIFFERENCE?
  - CHOICES
  - NO 'VALUE JUDGMENT'
- ROCK
- CHAMBER
- GRAVEL-LESS PIPE
- SYNTHETIC MEDIA
- OTHER

BASIC PUMP SYSTEM

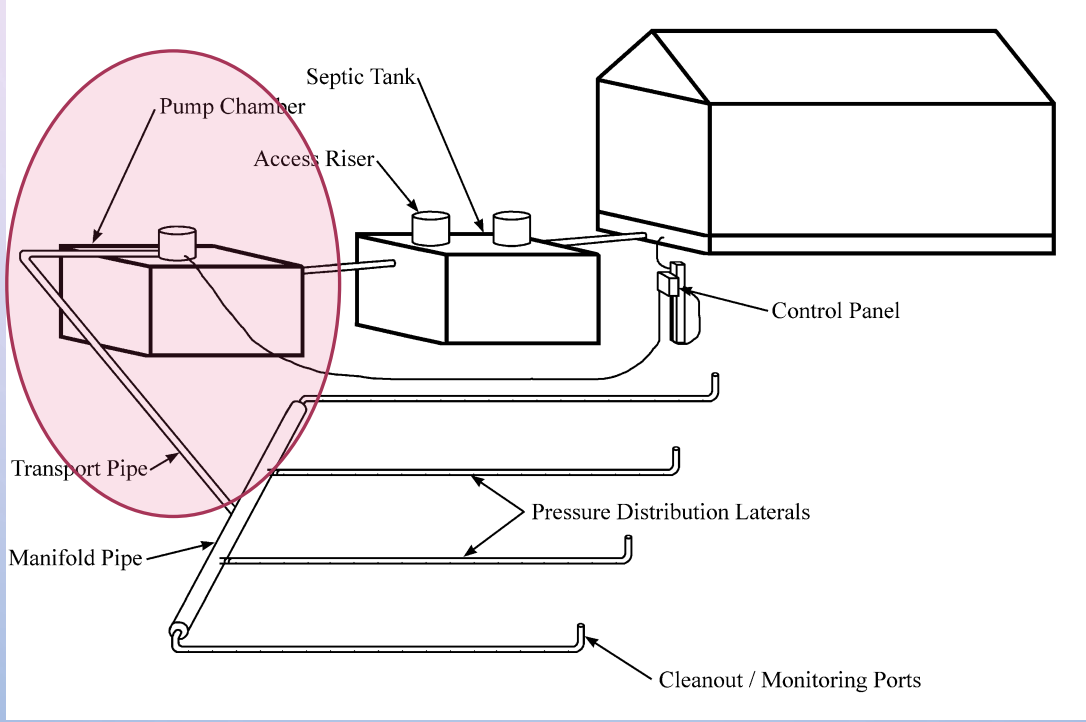
TANK

PUMP

DISCHARGE ASSEMBLY

CONTROL

WIRING



SYSTEM TYPE

SIPHON

PUMP

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ADVANCED TREATMENT… WHY?

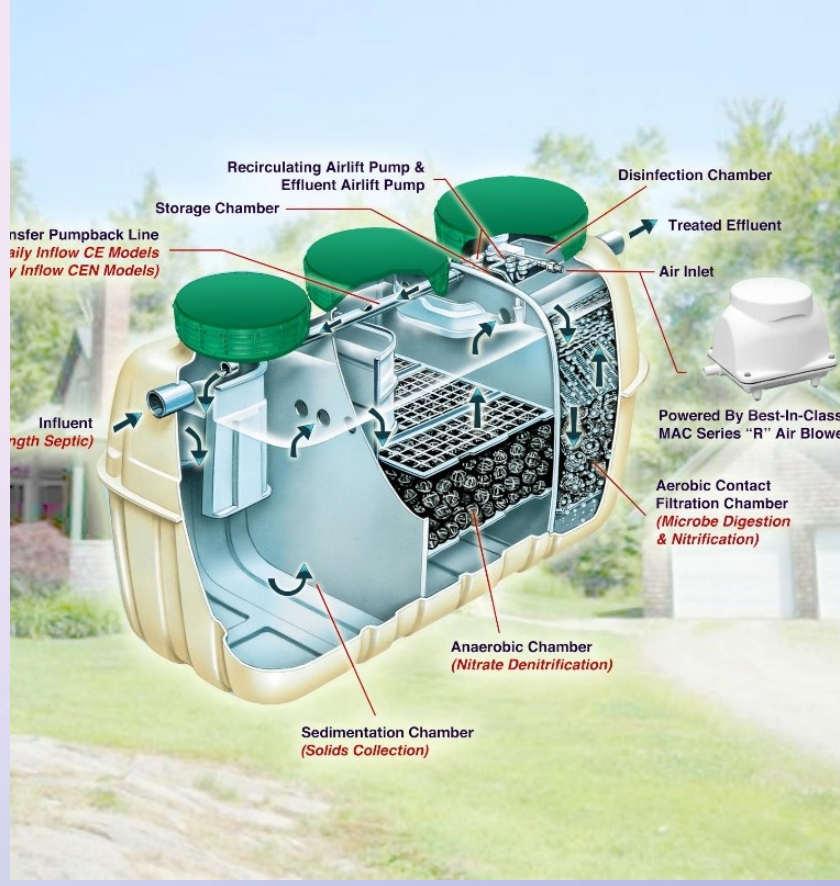
Environmental concerns = Higher Risk

Denser population = Higher Risk

Complicated systems to address Higher Risk = Higher Risk

Higher Risk = Higher need for O&M

RISK & MANAGEMENT



ALTERNATIVE TECHNOLOGIES

WHAT ARE THE CHOICES?

- Aerobic treatment units
- Media Filters
- Disinfection
- Drip Distribution
- Separation technologies
- Others

WHY USE ALTERNATIVE SYSTEMS?

- NEW IDEA
- POSSIBLE SIZING REDUCTIONS
- ADDITIONAL TREATMENT
  - MEET SEPARATION REQ'S.
- SOIL PROBLEMS
  - NATURAL
    - CLAY
    - FISSURED ROCK
  - FILL
- KEYS
- RECORDS
- PROPER APPLICATION
- MANAGEMENT

CONCERNS FOR TECHNOLOGY APPLICATIONS

- INCREASED COST
- INCREASED MAINTENANCE
- CONVENTIONAL SYSTEMS HAVE PROVEN THEMSELVES

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BUSINESS OF OPERATIONS & MAINTENANCE

INDUSTRY BASICS

THE BUSINESS OF

- Being a professional in the OWTS industry
- Knowledge is key
- Communications and the treatment train

THINGS TO KNOW

Service – what services will you be providing – can you expand?	Finances – understanding the numbers	Training – Everyone needs it – how you can provide it	Marketing – selling yourself and your business
Sales – income!	Team – what comprises your team – there is no “I” in team	Equipment needs	Values and foundation – the base structure of your business philosophy

ROLES

RESPONSIBLE MANAGEMENT ENTITY

- GOOD
  - MAKE IT HAPPEN
  - COST EFFECTIVE
- BAD
  - LACK OF EXPERTISE
  - MONOPOLY
  - FOX IN THE HEN HOUSE

PROFESSIONALISM

- PROFESSIONALISM IS NECESSARY TO ADVANCE THE INDUSTRY
- REPUTATION IS IMPORTANT WHEN SELLING YOUR SERVICES
- YOUR ACTIONS REFLECT ON THE INDUSTRY

BUSINESS

- ASSESS SITE – TO DERMINE SP NEEDS
- SYSTEM INSPECTION
- REPAIRS/UPGRADES
- CONTRACT
  - AGREED UPON SERVICE – LET THEM KNOW YOU WERE THERE
  - CHECKLISTS (STANDARD)

HOW DO I FUNCTION AS AN O&M SERVICE PROVIDER?

Perform Operational Service Visits

Collect and Record Information

Mechanical Components

Component Operational Status

Perform Routine Maintenance on Systems

Monitor System Performance

Report System Status

WHOLE SYSTEM

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SUMMARY

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