SECTION A-A

PROTOTYPICAL SHOP
SITE ANALYSIS

Three basic types of landscape problems.

1. Land itself - (its natural conditions and materials).
2. Structures and buildings within the land under consideration
   (that have been or can be put on the land).
3. The people that inhabit the structures.

Problems of Land

I. Climate

Typical annual patterns for various sections of the country.

1. East - humid climate
2. West - dry climate
3. North - cold
4. South - warm

A. Temperature - Affects both plants and people. Both need
special treatment if temperature goes beyond the comfortable
range (above or below).

1. Minimum temperature establishes the northern boundary for
plants.
2. As temperature range reaches lower extremes choice of
plants is smaller.
3. Transition area - from cold winters to milder winters
   a. Average minimum temperatures - 5° to 10° above zero.
   b. Where broadleaf evergreens will grow.
   c. Detroit area is on the very edge.

B. Precipitation - Plants need evenly distributed rainfall through-
out the growing season (can be supplemented by artificial
watering).

1. Three zones (general)

   a. Humid - Eastern half of U.S. - average 25” annually and up.
      (1) Cold humid
      (2) Warm humid
b. Arid to semi-arid - Western half of U.S. - less than 25" annually.
   (1) Warm dry
   (2) Cold dry

c. Humid to semi-arid - Dividing strip through center of country from Minnesota and North Dakota south to Texas.

2. Highest precipitation in country Pacific N.W. - Bulk of rainfall is during winter (non-growing season because of cold). Generally classified "summer dry."

3. In the entire western half of country use native plants only unless water is supplemented by artificial watering.

C. Humidity - Measure of moisture in atmosphere is also a measure of livability for plants and people.

1. Related to precipitation - when humidity reaches 100% it rains.
2. Related to temperature - July humidity in San Francisco and New York is just about the same. New York is uncomfortable (temperature is 10 to 15° higher).

D. Sunshine - Essential to growing plant materials and essential to general personal comfort of people (a psychological element).

1. Heavy fog and desert glare are extremes which make us appreciate temperature and moderate light conditions.
2. In regions of heavy dull weather - design landscapes which lighten and liven.
3. Regions of dry and glaring climates we use many trees and structural shade elements to temper and diffuse the light.

E. Frost - Determines quality and quantity of vegetation in a region. (Frost free periods are growing seasons for plants.)

1. Fall color - dry fall - sunshiny warm days - temperature cold nights - sugar production in leaf.

CLIMATIC REGIONS (In terms of landscape development). (Map)

1. Humid Northeast - Definite summer and winter seasons.
2. Humid Southeast - "Old South" home of the gardenia, magnolia, and subtropical palms.
Site Analysis
Page 3

3. Semi-arid to Arid Northwest - Prairie, Great Plain, mountain and desert.
   
a. Variable and unpredictable weather.
b. Generally dependent on artificial irrigation.
c. Least developed in terms of landscape development.

4. Arid to Semi-arid Southwest - Texas west to the California deserts.

5. Summer dry Pacific Coast - (North Pacific & South Pacific)
   
a. Northern portion both wetter and colder.
b. Southern portion - can grow tropical plant material.
c. Broadleaf evergreen zone from north to south.

Local variations exist within these primary regions. These correspond to difference in --

1. Latitude
2. Altitude
3. Proximity to large bodies of water

Inland Site

1. Hilltop Site - may be too cold and windy for comfort in winter unless protected by windbreaks.
2. Valley Sites - have less air circulation - fog and cold air settles in valleys - frost occurs in bottom lands first.
3. Ravine - cold air settles in ravines and flows downhill.
4. South Slopes - are warmer in winter and heating costs will be less. Are usually more pleasant in summer if there is an upslope draft.
5. North Slopes - are damper but may be more desirable in hot dry climates providing the north wind is not objectionable.
6. Desirable prevailing summer breezes (S.Z. - S.W.) - in some areas they may come from the same directions as the undesirable (N.W.) winds.

Coastal Site

1. Shore Sites - facing S.W. receive more winter sun but have more glare.
2. Tall buildings and trees may cut off air flow but the moisture influence will still be felt.
Site Analysis
Page 4

3. Cooling night-time breezes flow downhill in ravines.
4. Cooling afternoon draft of air flows inland on open slopes.
5. Hilltop Sites - have magnificent views but are subject to deep ocean fogs.
6. Waterfront Sites - subject to shallow radiation fog.
7. Gentle air flows and eddies felt on open slopes.
8. Sites shielded from the ocean in a marine climate, if facing east, have a desirable morning exposure but, if facing north, are more damp and cooler.
9. Best location is generally half-way up slope.

II. Topography

A. Slopes

1. Flat Ground up to 2% slope.
   
   Easiest to develop.
   Problem in moving water across it. (More absorption due to deeper soils.)
   Little interest and variety. (Interest requires more imagination.)
   Deeper soils are usually found here.

2. Sloping or Rolling Ground 2% to 8% slope.
   
   Generally more interesting - provides great possibilities in use of ground forms and structural forms.
   Drainage is easier to handle.
   Water must be handled to avoid erosion.

3. Hilly Slopes 8% to 16% slope.
   
   Difficult to develop.
   Costly to develop.
   Soils are thin - sometimes rocky conditions.
   Can provide the most dramatic and exciting development.
   Require structural or architectural solutions.

B. Prevalence of earth or rock forms

1. Rock Forms
   
   Rough and angular
   Difficult to change natural rock outcroppings and ledges.
   Have gardens and houses built around them.
Site Analysis

Page 5

2. Earth Forms

Easier to remove or alter
No more pleasing forms in nature than flowing curved planes
of naturally weathered rolling hills.
Chief casualty of most hillside developments.

III. Vegetation - Landscaping processes tend to concentrate too much
and too soon on planting.

A. Native - Plant formation which exists and is adapted to flourish
in its climatic region related to both soil and climate.

B. Agricultural - Field crops, fruit crops, livestock, and mixed
farming produce a typical rural landscape which may influence
a landscape development within its environment.

C. Ornamental - (may include native and agricultural vegetation).

1. Introduced to produce certain functional problems as:
ground cover, windbreaks, screening, shade, fragrance, enclosure
2. Introduced to produce visual pleasure.
3. Complete the balanced and harmonious landscape we need
for comfort and peace of mind.

L. Creative Use

1. Use of native material expresses native landscape in a
poetic way - "Aspens of Colorado," "Sugar Maples in Vermont,"
"Magnolias in Georgia."
2. In the Southwest, where native vegetation is in dull grays
and browns, use strong clear greens of plants from more
humid areas. This renders the climate more livable and
brings welcome relief and contrast.
3. In prairies plant trees.
4. In forests clear open spaces - plant grass.
5. In deserts plant trees and grass.

GOOD REFERENCE BOOKS FOR PLANT MATERIALS

Wyman, Donald - Shrubs and Vines for American Gardens
Wyman, Donald - Trees for American Gardens
<table>
<thead>
<tr>
<th>SOIL</th>
<th>map symbol</th>
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<th>Road Building</th>
<th>Septic Tank D/E</th>
<th>Irrigation</th>
<th>Recreation</th>
<th>Soil Depth</th>
<th>Texture</th>
<th>Perm. in/hr</th>
<th>Water Table</th>
<th>Swell Poten.</th>
<th>Heavy Poten.</th>
<th>Ph</th>
<th>React</th>
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Optimal Agricultural Productivity Yield Types:
For "A" Level Management: ____________________________
For "B" Level Management: ____________________________

Woodland Suitability Group: ____________________________

Comments: _______________________________________

Soils Tolerance Form, DMY, 1970
Adjustable Aluminum Effluent Weir insures even flow distribution through settling basin.

Adjustable Epoxy-Coated Scum Baffle.

Design of settling basin provides efficient separation of clear effluent from activated sludge and floating solids.

Exclusive Non-Mechanical Surface Skimmer Automatically Removes Floating Material From Stilling and Settling Basin Areas.

Air Relief Valve

Filter-Silencer with Weather Hood

Rain-Tight Motor Control Box

V-Belt Guard

Rotary-Type Blower

Drip-Proof Electric Motor

Aluminum air diffuser drop pipe with air regulating valve.

Air header is epoxy-coated, inside and out.

Easily Removable Stainless Steel Basket For Screening Incoming Sewage

Inlet Grout Box

Epoxy Coated Interior and Exterior For Superior Corrosion-Resistant Protection

Cylindrical aeration chamber provides high velocity spiral flow for efficient suspension of activated sludge.

Concrete Support Pier (By Others)

Support Angle with Anchor Bolt Holes

Stilling Chamber Inlet Pipe

Lifting Loop

XCLUSIVE AUTOMATIC SURFACE SKIMMING*

The circulating liquid in the aeration tank (at left), flowing past the strategically located eductors, sets up a “return flow” which skims the surface of the settling basin compartments by drawing the surface liquid through the skimming troughs to the aeration tank. This feature reduces operator time and maintenance expense.

AVAILABLE ONLY FROM SMITH & LOVELESS

*PATENTS PENDING
The New
Smith & Loveless
CYLINDRICAL “OXIGEST”.

New from Smith & Loveless. A complete, factory-built cylindrical “Oxigest” designed for 2,000 to 10,000 gallons-per-day sewage treatment requirements. Extended aeration type sewage treatment assures odor-free, nuisance-free operation.

New cylindrical concept induces highly turbulent mixing action and lends itself to a more efficient spiral flow pattern.

Hopper type settling tank provides automatic displacement of settled sludge to aeration tank. Positive downward flow through bottom slot returns sludge continuously without mechanical aids. Nothing to clog or break down. No sludge build up to “short circuit” the treatment process.

- Requires minimum land for plant site
- Completely factory built, factory tested
- Can be installed and started up in less than a day
- Odor-free, nuisance-free aerobic treatment

Non-clog air supply system with aluminum air diffusers discharges air against water flow. High shear action at discharge point causes air dispersion to accelerate the transfer of oxygen. Air distribution is simple, fully adjustable. Blowers are factory installed and bolted directly to the air header for ease of maintenance.

Complete line of accessories includes a comminutor, fibreglas motor-blower housing, chlorination equipment, flow measuring weir box and sludge storage.

Designed for a minimum of maintenance attention, the new “Oxigest” is available in nine models with capacities for serving 20 to 100 people per day. Ideal for small subdivisions, mobile home courts, motels, shopping centers, apartments, courts, hospitals, schools and factories not served by municipal sewerage facilities.

Mike Microbe represents the little microscopic, living organisms in domestic sewage. He is a “blob” with a personality, created to help explain the biological process that occurs in treatment plants such as the “Oxigest.”

The process is best described as an “Extended Aeration” or “Aerobic Digestion” treatment system. It provides simple, dependable treatment for domestic sewage by introducing an abundant supply of air into the sewage to supply oxygen for the living organisms, and to keep sewage solids in suspension for a sufficient period of time to permit digestion to take place.

Mike Microbe and the other living organisms live off the organic matter and consume it. They are stimulated to activity by the abundant oxygen and thrive on the rich food source of high-energy organic wastes.

Actually, the treatment plant provides an ideal environment or “living condition” for the organisms. They multiply rapidly, as needed, to digest the organic matter.

The turbulence in the aeration tank aids the digestion process by rapidly mixing the fresh sewage solids with the activated sludge, by breaking up the sewage solids and by bringing the contents of the aeration tank in contact with the atmosphere where additional oxygen may be dissolved.

Thus the aerobic bacteria or microbes reduce the organic matter and waste to a stable form—odor- and nuisance-free.

Sanitary engineers often refer to the process as a long-period aeration system or a “complete mixing, extended-aeration, activated-sludge process.”
from FACTORY...

INSTALLS IN LESS THAN ONE DAY

Quality-controlled from design board to jobsite, the new cylindrical “Oxigest” is factory built and can be delivered by a special Smith & Loveless truck direct to the jobsite for installation in less than a day. Parallel installations, either above ground or below grade level, offer an economical means of keeping pace with growing sewage treatment needs.

For plant requirements up to 350 persons, Smith & Loveless offers the rectangular factory-built “Oxigest.” The field-erected “Oxigest” with capacities up to 10,000 persons is designed to meet even larger requirements.

Write for the Smith & Loveless Engineering Data manuals on sewage lift stations and sewage treatment equipment.

... to INSTALLATION
AERATION
modern sewage treatment
Jet Aeration

Puts an end to septic tank nuisance...raises health standards in areas where used

Jet Aeration has been field-proven in hundreds of installations and has won enthusiastic approval from health officials, builders, and homeowners. It uses a purification process as large central sewage treatment plants -- with equally effective results.

Jet Aeration has been inspected and approved by F.H.A. and V.A., and is desirable for their insured home loans. In addition, Jet Aeration plants have been installed by the U.S. Army Corps of Engineers, U.S. Navy, the U.S. Post Office, and many other government agencies where high performance specifications are strictly adhered to.

Tests definitely prove Jet Aeration makes the septic tank obsolete. Compare the following results based on the important measures of sewage treatment:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Septic Tank</th>
<th>Jet Aeration</th>
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<tbody>
<tr>
<td>Biological Oxygen Demand</td>
<td>Should be low</td>
<td>Should be low</td>
</tr>
<tr>
<td>Dissolved Oxygen</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Suspended Solids</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Ammonia Count (a measure of bacteria kill)</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

Jet Aeration employs a bio-chemical action in which bacteria, using the oxygen in solution, break down and oxidize household sewage. Its patented design incorporates three separate compartments, each performing a specific function in the total purification process.

The PRIMARY TREATMENT compartment receives the household sewage and holds it long enough to allow the solid matter to settle to the sludge layer at the tank's bottom. Here anaerobic bacterial action continuously breaks down the sewage solids, both physically and bio-chemically, pre-treating and conditioning them for passage into the second or AERATION chamber.

In the AERATION chamber the finely divided, pre-treated sewage from the PRIMARY TREATMENT compartment is mixed with activated sludge and aerated. The JET AERATOR circulates and mixes the entire content while injecting ample air to meet the oxygen demand of the aerobic digestion process.

The final phase of the operation takes place in the SETTLING/CLARIFYING compartment where there is no circulation to interfere with the settling or clarifying action. In this chamber any remaining suspended material is settled out and, by means of the tank's sloping end wall, is returned to the AERATION chamber for further treatment. The odorless, clarified liquid remaining at the top flows into the final discharge line.
The most noticeable benefit of the Jet Aeration plant is that it eliminates embarrassing, offensive sewage odors.

Jet Aeration's water-tight, self-contained plant treats sewage in the same manner as a central sewage plant. The highly treated effluent is normally colorless, odorless, and meets standards of larger plants. Where clay soil, rock, shale, or high water tables exist, many homes simply cannot be built without Jet Aeration. Gross pollution of ditches and streams is eliminated by Jet, and, of course, this protection is extended to ground water supplies. This latter point is especially important to homeowners with water wells on their properties.

Normally, the highly treated Jet Aeration effluent eliminates the need for leaching fields or subsurface filters. In many areas, Jet Aeration effluent is discharged directly to a storm sewer, flowing stream, or any well-defined line of drainage.

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Jet Aeration's total net holding capacity for its patented three-compartmented tank is 1200 gallons. Primary Treatment chamber holds 475 gallons; Aeration chamber holds 600 gallons; and the Settling/Clarifying chamber holds 125 gallons.

The Jet Aerator's fractional horsepower motor is automatically cycled to run only a part of each day. When running, power consumption is the same as a 125-watt light bulb. This means that operating costs will range from $1 to $1.90 per month, depending upon local power rates.

With Jet Aeration, automatic laundries, dish washers, and garbage grinders present no problems. Septic tanks cannot offer this benefit.

Frequent pumping of the tank, as required with septic tanks, is eliminated. Under normal circumstances the tank will never need pumping. Solids are partially decomposed in the Primary Treatment chamber, and then passed to the Aeration chamber for final treatment.

Because of Jet Aeration's high degree of sewage treatment, most health authorities either greatly reduce the requirements for sub-surface filters and leaching devices (commonly used with septic tanks) or eliminate the requirement for these altogether. Naturally, this results in a great savings to the home buyer, in original cost and maintenance.

Installation cost for a modern Jet Aeration home plant is no more than for the old-fashioned septic tank -- in many instances it is even less.
SOLD THRU LOCAL LICENSED DISTRIBUTORS
Jet Aeration is sold only thru established, carefully selected, licensed distributors, who meet the high standards of workmanship and service set by Jet Aeration Co. They are established local businessmen with an interest, investment, and reputation in the community.

FACTORY-TRAINED SERVICEMEN
All local servicemen receive in-the-field training by Jet Aeration factory engineers. Several times each year Jet Aeration holds a "Factory Training School" at the Cleveland, Ohio, factory; attendance at one or more of the schools is required of distributors.

EFFLUENT QUALITY GUARANTEE
The Jet Aeration plant is guaranteed to produce an effluent with an average 5-day BOD concentration of 40 ppm or less, based on an influent of normal domestic sewage having an assumed 5-day BOD concentration of 200 to 225 ppm.

CONTINUED INSPECTION / SERVICE
After the first 2 years, all Jet Aeration distributors offer the inspection/service policy described above, for a nominal charge.

50-YEAR WARRANTY PROGRAM
Jet Aeration's 50-year warranty program sets a ceiling on repair charges. After the initial 2-year guarantee period, any unit up to 50 years of age, regardless of condition, may be inspected for only $25. An inspection fee of $25 will be charged for any unit up to 60 years of age. For each additional year of age, the charges range from 15% to 45% of the cost of a new unit, with the maximum charge being $200, based on current prices.

OWNER'S MANUAL STRESSES OPERATION
Although no maintenance is required by the owner, a comprehensive manual comes with every unit. This informative manual explains operation of the Jet Aeration plant and stresses the vital role the operation plays in maintaining the family's good health and well-being.
Every unit is factory tested.

**Provides a highly efficient, practical, and economical method of sewage disposal.**

**AERATOR OPERATION**

Large quantities of air are drawn into the snorkel tube, above the unit, travel to the red housing and down the hollow propeller shaft to the aspirator tubes (located at the propellers) where the air is expelled. The propellers reduce the air bubbles in size and direct them to the tank floor where they reverse direction and travel to the surface in a wide, spiral pattern. The propellers further serve to mix thoroughly the entire aeration chamber contents and break down all remaining solid material as it is drawn into the propeller stream.

**AUTOMATIC CONTROLS**

Controls for the Jet Aeration unit include a factory-set time clock for automatically cycling the unit's operation and a fusstat plate with a warning light. If there should be a current overload, the fusstat will burn out, open the circuit and protect the Jet Aerator from damage. A pilot light, located on the fusstat plate, will glow red when the fusstat has burned out indicating that service is needed.

**NO OWNER MAINTENANCE**

Absolutely no maintenance is required by the homeowner, aside from changing a fuse if ever necessary. Any other service on the unit will be done by the local, factory-trained Jet Aeration Distributor, whose name and phone number are clearly displayed on the special nameplate attached to the time clock.

**REPAIR**

Even the finest mechanical equipment will some day require repair, and over a decade of experience has shown the frequency of repair for the Jet Aerator to be the lowest in the industry.
MODERN SEWAGE TREATMENT PLANTS BENEFIT BOTH THE HOMEOWNER AND THE COMMUNITY BY HELPING TO PREVENT POLLUTION.

The Jet Aeration Company believes that the best way of handling domestic sewage is to collect it in sanitary sewer lines and transport the sewage to modern, properly operated, central sewage plants. Where central sewage plants are not yet available, we believe that today's health standards, as well as the spirit of pollution control, call for the most efficient alternative. No number of outhouses, cesspools, or septic tanks can effectively serve today's needs. We must conclude, that in unsewered areas, only the most efficient individual home sewage treatment plant is worthy of consideration.

JET AERATION MEETS OR EXCEEDS ALL CRITERIA FOR EVALUATING AND TESTING HOUSEHOLD AEROBIC SEWAGE TREATMENT SYSTEMS AS RECOMMENDED IN THE NAS-NRC REPORT 586

This report is the result of a study made by the National Academy of Sciences -- National Research Council for the U.S. Public Health Service. It was the purpose of this study to develop criteria for evaluating and testing individual household aerobic sewage treatment systems. The Jet Aeration plant meets or exceeds all criteria recommended in Report No. 586. For example, the report recommends a minimum aeration compartment capacity of 400 gallons. Jet Aeration exceeds this by 50%. In the Jet Aeration tank the aeration compartment alone has a 600-gallon capacity and the total net holding capacity of the tank is over 1200 gallons.

ELIGIBLE FHA-VA INSURED HOME LOANS

<table>
<thead>
<tr>
<th>TITLE I</th>
<th>TITLE II</th>
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<tr>
<td>Modernization of Existing Homes</td>
<td>New Homes</td>
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Only Licensed Distributors are authorized to sell, install and service Jet Aeration Sewage Disposal Plants.