Warm Springs Specific Plan

Development Standards Handbook Framework

A Part of the Warm Springs Specific Plan, Washoe County Comprehensive Plan

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WASHOE COUNTY DEPARTMENT OF COMPREHENSIVE PLANNING

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This document, as adopted, is a part of the Warm Springs Area Plan, one of a series which constitutes a part of the Master Plan for Washoe County, Nevada.

This document is available for $5.00 from the Washoe County Department of Comprehensive Planning.

If you have a copy of the Comprehensive Plan notebook, please place this behind the Warm Springs Area Plan tab.

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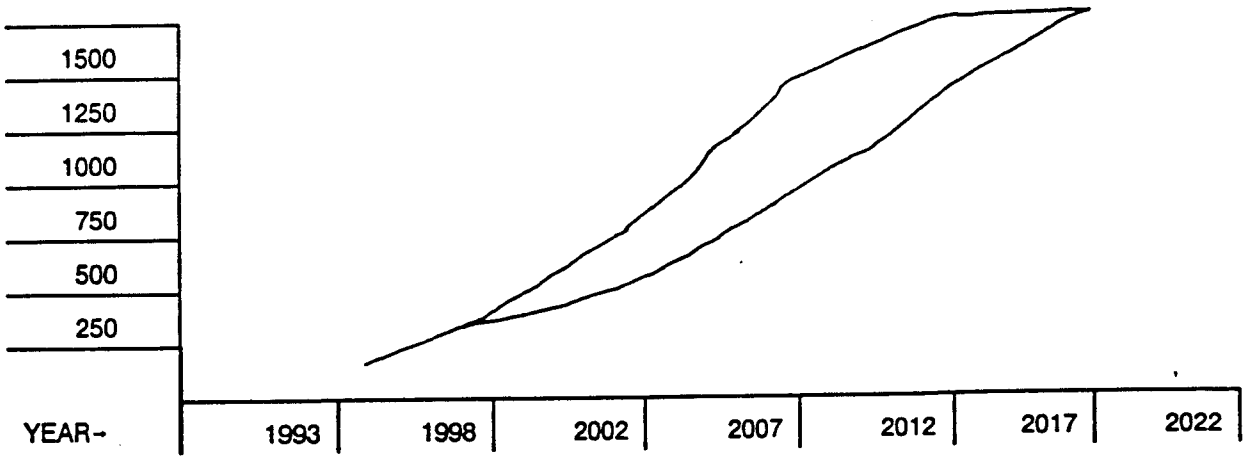
PROJECTED COMMUNITY GROWTH

The Warm Springs Specific Plan Area is a planned new suburban community and, like all other new communities, its future growth rate is impossible to predict accurately. There is no historical basis to project into the future. It has taken over 20 years to develop the 257 residences in the valley. At that rate of growth, it would take over 200 years to build out the projected 1,741 housing units in the Specific Plan Area. On the other hand, the City of Sparks has historically developed 500 to 700 units per year. At this rate, the S.P.A. would be built out in four to five years. The actual growth rate of the S.P.A. will be somewhere in between.

For Regional Planning Conformance purposes, however, a projected range of growth has been determined. It is based on several assumptions. During the initial years of development, a relatively small "market share" is assumed. After the initial five years of development, two gradually increasing growth rates are used. The "range" in between is an educationed guess. For the purpose of this plan, it is assumed that the actual rate of growth will be somewhere within this range.

S.P.A. PROJECTED GROWTH RATE

Growth Rate	Year	Dwelling Unit Rate Per Year	Total Dwelling Units	Total Population Based on 2.5 Person Per Household
5-Year	1993	50		125
5-Year	1998	45-65	275-375	690-980
4-Year	2002	75-100	575-775	1440-1940
5-Year	2007	75-100	950-1275	2380-3190
5-Year	2012	90-100	1450-1741	3630-4353
5-Year	2017	0-60	1741	4353



For Regional Plan purposes, approximately 40% of the Specific Plan Area community will be developed by the year 2007. If this projection is accurate, it will take approximately 25 years to "build out" the S.P.A.

MONITORING

With each five year update of the plan, the actual rate of growth should be calculated and confirmed with this projection. Over time, this projection should be modified to reflect actual conditions so Washoe County can program the provision of community services not provided by the developers.

CONSERVATION

CULTURAL AND SCENIC RESOURCES

ARCHAEOLOGICAL RESOURCES

Any undisturbed areas in the plan area should be treated as potential archaeological sites and an appropriate site survey or research may be needed prior to development. In addition, a note shall be placed on all construction drawings stating:

NOTE

Should any prehistoric remains/artifacts be discovered during site development, work shall temporarily be halted at the specific site and the Department of Conservation and Natural Resources, Division of Historic Preservation and Archeology, shall be notified to record and photograph the site. The period of temporary delay shall be limited to a maximum of two (2) working days from the date of notification.

ARCHITECTURALLY SIGNIFICANT AND HISTORIC PLACES

Developments in or near these sites should mitigate impacts on the historic value of the sites. In addition, a note shall be placed on all construction drawings stating:

NOTE

Should any prehistoric remains/artifacts be discovered during site development, work shall temporarily be halted at the specific site and the Department of Conservation and Natural Resources, Division of Historic Preservation and Archeology, shall be notified to record and photograph the site. The period of temporary delay shall be limited to a maximum of two (2) working days from the date of notification.

SCENIC AREAS

Development will be orientated around open space corridors to preserve the rural open character which now exists. Building orientations and setbacks will be designed to retain the view sheds.

LAND RESOURCES

Development in the area should not degrade or destroy these resources, nor jeopardize the safety of the people in the area.

EROSION HAZARDS

During construction, erosion controls for disturbed areas are needed until ground cover is re-established. All disturbed areas subject to erosion after development need to be stabilized with an acceptable stabilization method. Level or slopes of 4:1 or less in disturbed areas will be stabilized using appropriate vegetation.

LIMITATIONS FOR SEPTIC TANK ABSORPTION FIELDS

On-site surveys will be required to determine appropriate design of septic systems in accordance with Washoe County District Health Department regulations. Previous on-site surveys note generally acceptable soils in the northern half of the Specific Plan Area. The similarity of soils throughout the SPA indicates generally acceptable soils.

BUILDING LIMITATIONS

Because of the prevalence of expansive and compressible soils, on-site investigations must be conducted to determine the appropriate design of foundations and specific placement of buildings, roads and utility lines. These site-specific investigations shall be conducted by a geological or geotechnical engineer prior to construction.

VEGETATION

Development in all areas will minimize disturbance to these areas as much as possible. Refer to design guidelines and landscape requirements in the Land Use Section and under Drainage for treatment of disturbed areas.

FIRE HAZARDS

Local fire agencies should be consulted about ways to minimize fire hazards to development. The requirement of the homeowners around the undeveloped perimeter of the project to provide a fire fuel break of a minimum 30 feet in width until such time as development occurs adjacent to their lot.

GEOLOGIC HAZARDS

Earthquake Hazards

Any faults found in the Specific Plan Area should be considered potentially hazardous. All projects will be required to submit studies to determine potential earthquake hazards. Recent fault lines, if present, should be surveyed in the field and shown on all subdivision maps. Proper setback from any active fault lines should be provided. Conditions, covenants, and restrictions (CC&R's) shall specifically address the prohibition of locating habitable structures on potentially-active (Holocene) fault lines, whether noted on the recorded map or disclosed during site preparation.

WILDLIFE AND WILDLIFE HABITATS

Open space areas will be undisturbed, maintaining the natural habitat for small wildlife. (Refer to Open Space and Drainageway Sections.)

Big Game Species

Open space corridors will be provided as a function of development activities for small game species.

Game Birds

To protect game bird habitat, vegetation (especially riparian vegetation) should be preserved, where possible, during development activity. Where vegetation is disturbed, mitigation measures will be implemented. (Refer to landscaping and reseeding provisions under the design guidelines for Open Space and Drainage Facilities.)

Non-Game Species

Any development in the area should protect natural areas that may support these non-game species and incorporate within the open space provided within each development area. Open space corridors should be left undisturbed providing habitat areas for small wildlife species.

WATER RESOURCES

DRAINAGE

A preliminary study has been completed that utilizes information generated on a previous study for the Pratt property (refer to appendix). This study analyzed the impact of planned additional development in the valley and establishes parameters for designing drainage improvements. The preliminary results are summarized below (refer to Plate 2).

DRAINAGEWAYS

One of the objectives of this plan is to utilize drainage facilities for a variety of open space uses, as well as to promote groundwater recharge. Design Guidelines Plates 3 and 4 establish design guidelines to be used to create drainageways to serve storm water run-off and groundwater recharge purposes, as well as open space corridors for recreational uses.

PRELIMINARY DRAINAGE PLAN

Plate 2 illustrates the preliminary design for drainage within the SPA area and Plates 3 and 4 establish design guidelines for the plan elements. The primary means for large lot flood protection will be on an individual basis. The overall drainage plan will incorporate drainage from large lot development areas. This preliminary plan is based on a hydrologic study prepared by SEA for a major portion of the Specific Plan Area, a summary of which is included in the appendix. The main features of the plan include:

Main Collector Road/Drainageway

Based on a series of alternatives that were analyzed early on in the planning process, it was determined that combining the drainage improvements with the central spine access roadway would allow for drainage control, adjacent development drainage outflow, a balance for excavation of the drainage swale to be used to elevate the central spine roadway, and provide for an open space corridor to connect the various land uses with an equestrian/pedestrian/bike trail system (refer to Design Guidelines Plates 3 and 4).

Minor SPA Tributary Drainage From New Development

A series of minor SPA tributary drainage swales is anticipated in the plan. These will be necessary to distribute development drainage to the central spine road drainageway. Their other function will be to intercept sheet flow from surrounding areas and direct it to the central spine road drainageway.

Detailed Drainage Studies Required

Utilizing the overall design guidelines 100 year design storm and flows established in the preliminary plan, detailed drainage studies should be required for all proposed developments within the Specific Plan Area. As development occurs, Washoe County will need to monitor each study to insure that the overall design parameters are met, and no additional flooding problems are created.

Temporary or permanent detention may be required for a certain level of development and should be required to conform to this preliminary plan based on the results of detailed studies.

Phasing and Implementation

The intent of the plan is to establish an overall concept for addressing the drainage problems within the SPA. A major portion of the SPA lies within the 100 year floodplain. All modifications to the floodplain will be done in accordance with Policy WS.3.9. Properties developed within the floodplain will require individual flood protection following current regulations. (Refer to Plate 5.) Properties following a scenario that involves development within a floodplain beyond the current regulations regarding floodplain development will be required to amend the FEMA maps in accordance with the standard FEMA policies and procedures. It will be necessary from a practical standpoint to allow these improvements to be built in phases as development occurs adjacent to them. Adjacent development will be required to construct any portion of the planned SPA drainage improvements that are within or adjacent to the proposed development. This will insure the improvements will be constructed over time, while allowing development to proceed without constructing all the improvements all at one time.

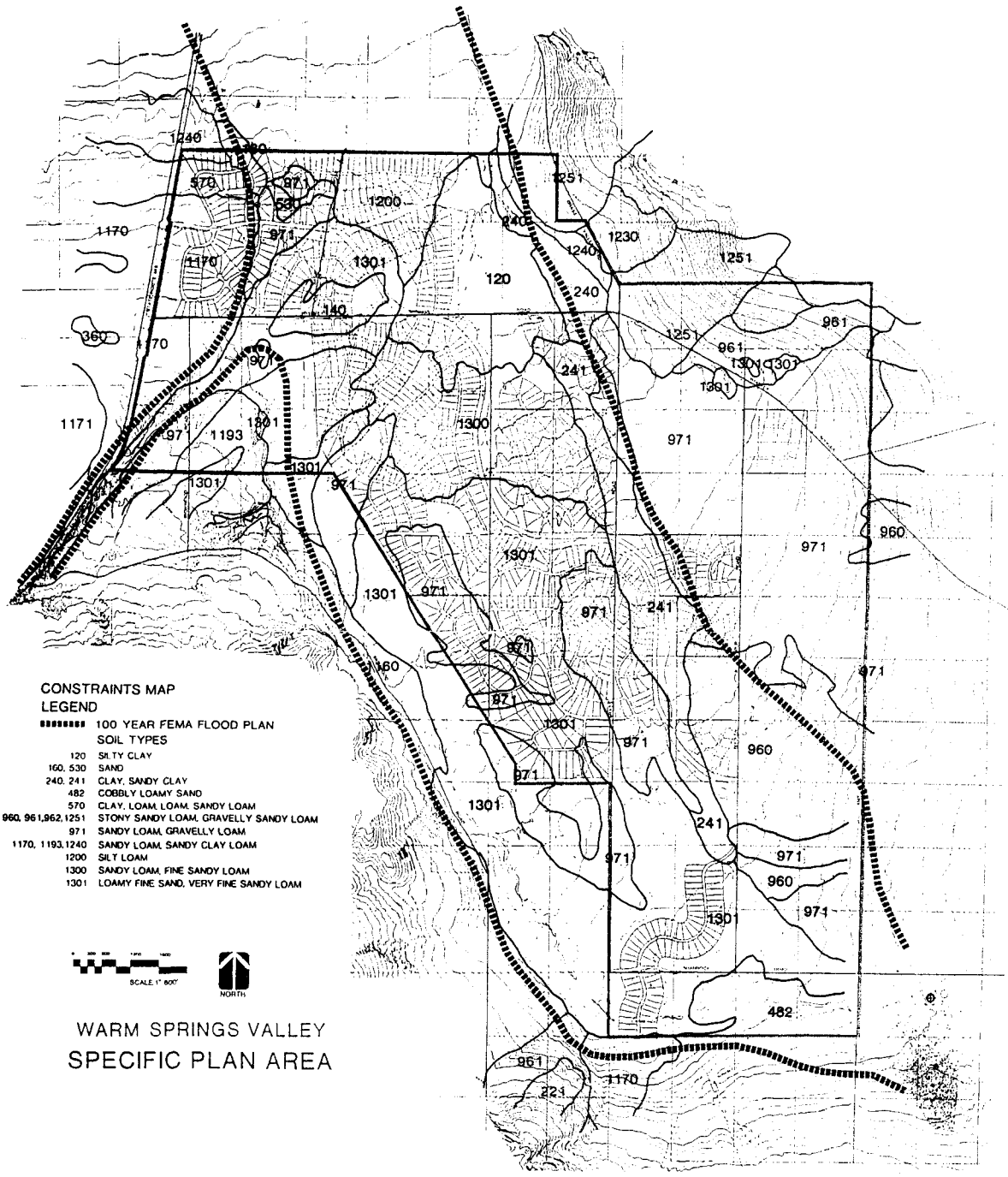
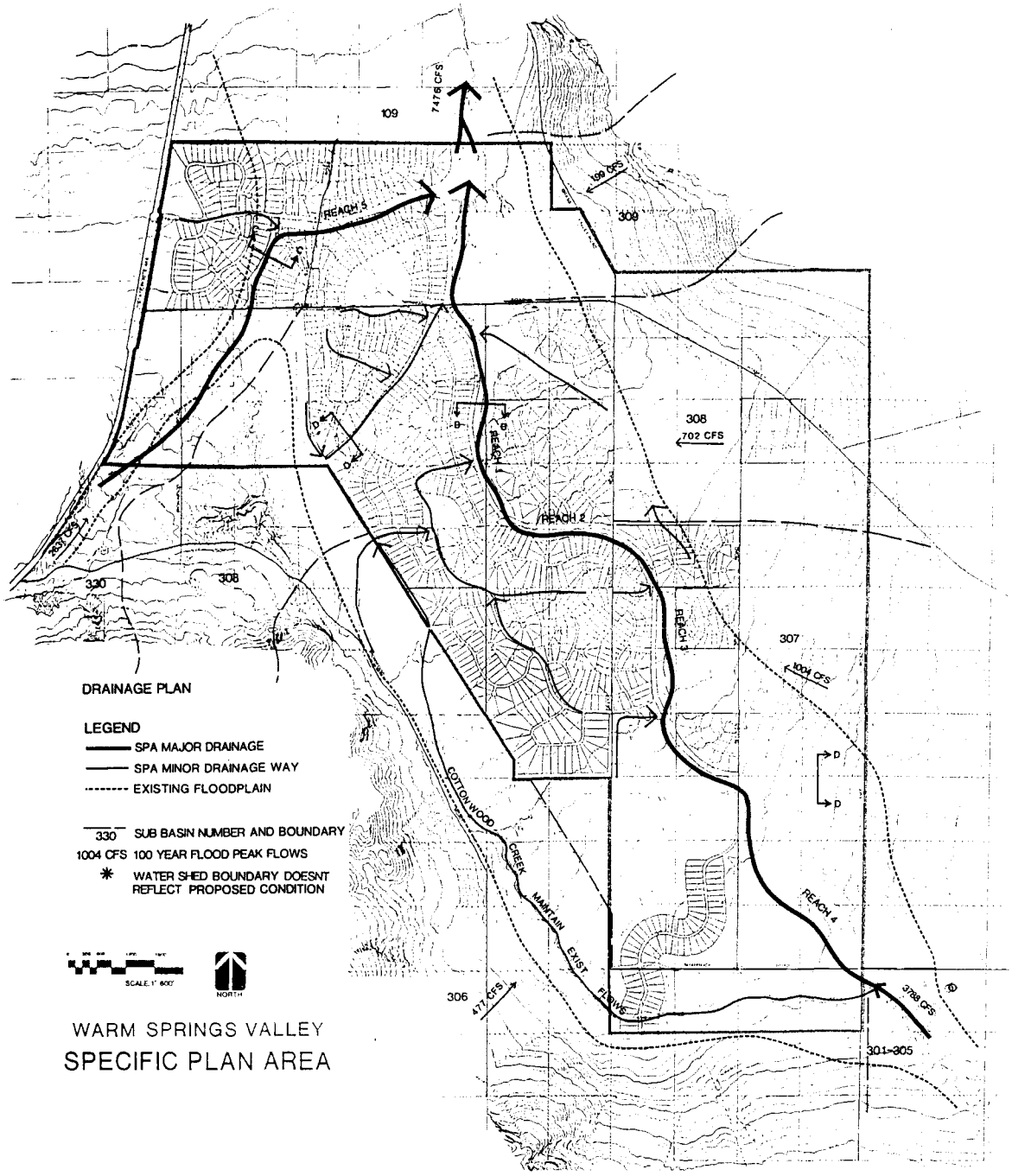
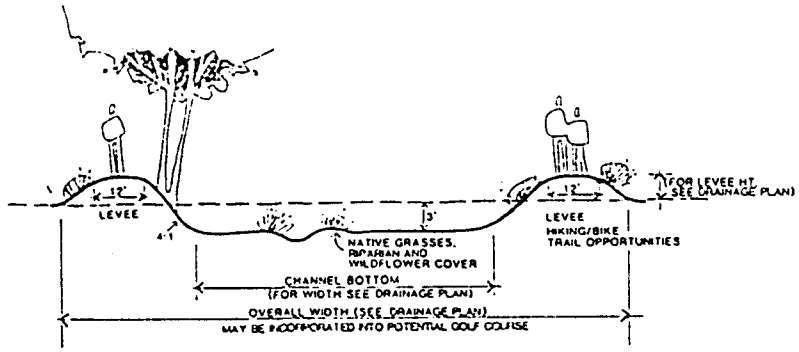

CONSTRAINTS MAP
LEGEND
100 YEAR FEMA FLOOD PLAN
SOIL TYPES
120 SILTY CLAY
160, 530 SAND
240, 241 CLAY, SANDY CLAY
482 COBBLY LOAMY SAND
570 CLAY, LOAM, LOAM, SANDY LOAM
960, 961,962,1251 STONY SANDY LOAM, GRAVELLY SANDY LOAM
971 SANDY LOAM, GRAVELLY LOAM
1170, 1193,1240 SANDY LOAM, SANDY CLAY LOAM
1200 SILT LOAM
1300 SANDY LOAM, FINE SANDY LOAM
1301 LOAMY FINE SAND, VERY FINE SANDY LOAM
SCALE 1" 800'
NORTH
WARM SPRINGS VALLEY
SPECIFIC PLAN AREA

PLATE 1

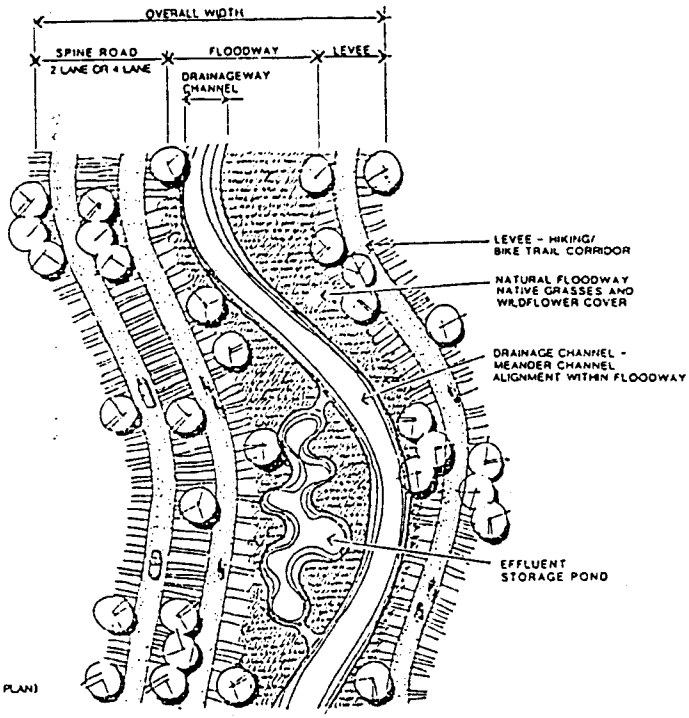


WARM SPRINGS VALLEY
SPECIFIC PLAN AREA

PLATE 2



SECTION C-C



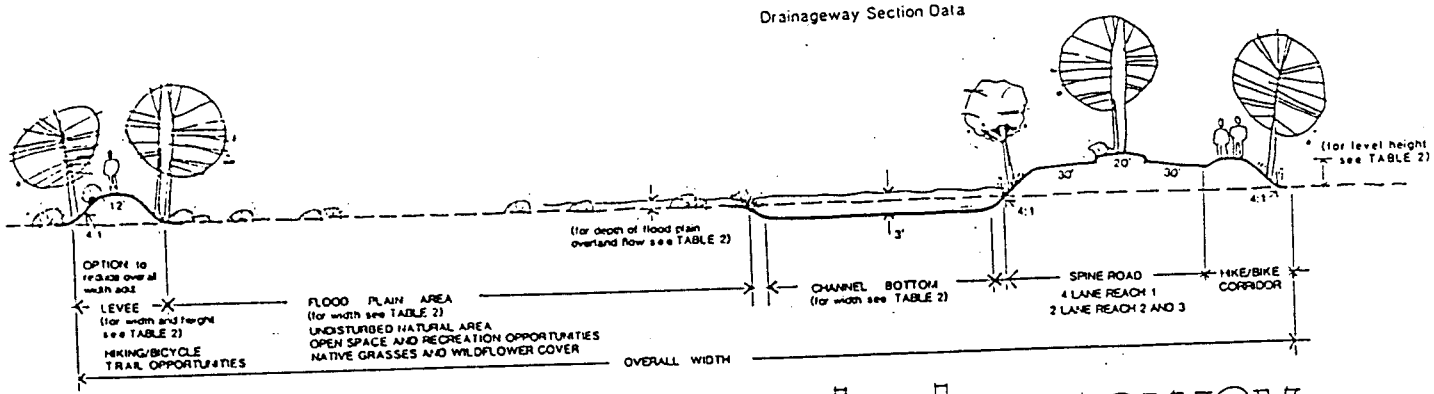
PLAN VIEW Drainageway Concepts

drainageway design guidelines

REACH NO.	CHANNEL BOTTOM WIDTH (FEET)	FLOOD PLAIN WIDTH (FEET)	FLOOD PLAIN DEPTH (FEET)	LEVEE HEIGHT (FEET)	OVERALL WIDTH (FEET)
1	52'	850'	1.7	3.7	950'
2	65'	295'	2.3	4.3	400'
3	95'	475'	1.9	3.9	780'
4	LOW FLOW	VARIES	1.0	N.A.	500'-600'
5	18'	130'	1.6	5'	300'

TABLE 2

Drainageway Section Data



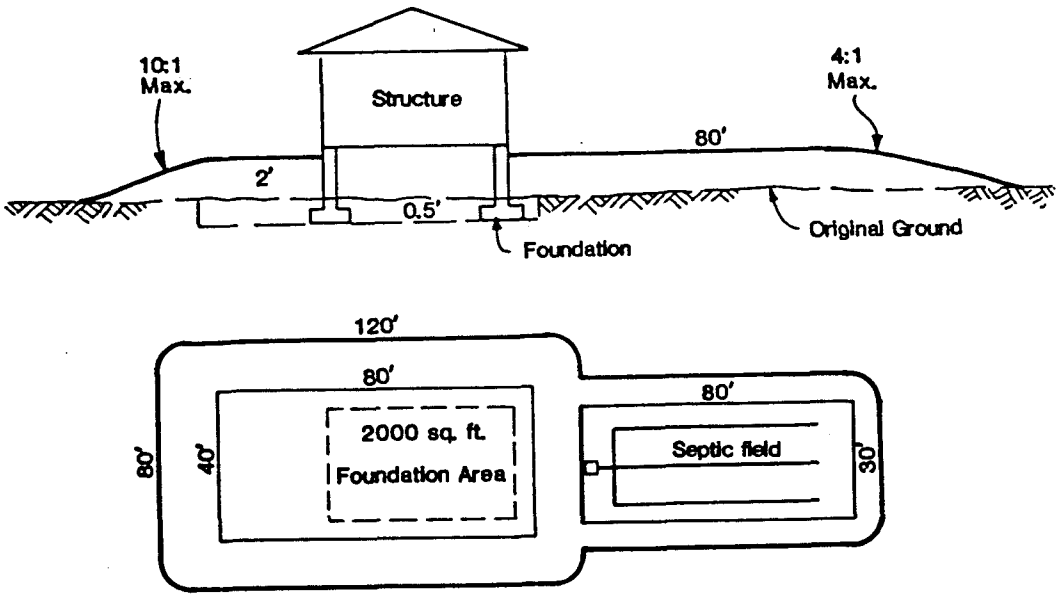
SECTION B-B

Reach 1 Drainageway

Reach 2 and 3 Drainageways with 2 Roadway Lane

drainageway design guidelines

PLATE 4



SCALE: 1"=50' APPROX.

LARGE LOT FLOOD PROTECTION

AGRICULTURAL

All subdivision final maps, parcel maps, and/or covenants and restrictions filed shall designate existing adjacent agricultural uses and contain a note of restrictions that states, "No formal written or verbal complaints can be filed with Washoe County and no law suits or other legal proceedings can be brought against any legally existing agricultural uses.".

RESIDENTIAL

DESIGN GUIDELINES

The purpose of the guidelines is to describe the principles, policies and standards that will control development to ensure that the Plan Area is built and maintained as envisioned in the planning process.

OBJECTIVE

To develop a community that capitalizes on the rural character of the Warm Springs area. A community that utilizes resources efficiently and effectively, giving consideration to design, marketability, and aesthetics.

STANDARDS

LOT CONCEPTS

All lot concepts are designed to promote the rural character of the Warm Springs Valley. Lots along Pyramid Highway will be located on a frontage road set back a minimum of 250' from Pyramid Highway right-of-way. (Refer to Plate 13). Open space corridors are provided by the required open space and transitional zone. Lot sizes vary from greater than one acre to five acres. Clustering of residential lots will be encouraged, which provides a reduction in lot size with no increase in density providing the remaining land is used for common open space, and provided the lots remain larger than one acre. Lots will have designated building envelopes, transition zones with minimal development, and designated open space (refer to Plates 8-12).

Building Envelopes

Building setbacks will vary, providing a more rural atmosphere in the streetscape. All lots will have an established building envelope with a minimum setback of 40 feet. Buildings may be located anywhere within the envelope, however, all buildings, structures or storage of any type will be confined to this area on each lot. The relationship and clustering between building envelopes will be designated to retain view sheds from building sites to provide open space corridors and provide for passive solar design opportunities. (Refer to Plate 8 for illustration of the variation in building envelopes.) The developer will be responsible for determining building envelope locations to provide consistency in the overall plan. The size and shape of the envelope may vary from lot to lot. The envelope's depth and setback are related to overall lot size. (Refer to Table 1 and Plates 8-12.)

Transition Zone

The transition zone provides an extension of usable yard area with a maximum percentage of required landscaping of specific plant types to provide neighborhood unity. The zone provides a transition from the open space to the developed portion on each lot. It will be the responsibility of the lot developer to install the required plant material to ensure neighborhood unity. The transition zone may also vary from lot to lot. The percentage of landscaping and depth are dependent on overall lot size. (Refer to Table 1 and Plates 8-12.)

Open Space

A designated portion of the lot will be left undisturbed or treated as community open space area in certain areas. These corridors are designated to protect the rural character of the Valley which currently exists. The open space, also a recreational amenity, provides

interconnecting areas for a multi-purpose trail system promoting pedestrian, cycling and equestrian traffic alternatives. (Refer to Table 1 and Plates 8-12.)

Community Landscape Area

In certain cases, such as neighborhood entries, Pyramid Highway frontage, Spine Road, etcetera, landscape treatments will be incorporated into the design of the development. Lot open space areas may also be incorporated into this community landscape area. (Refer to Plate 8.)

DENSITY CLUSTERING

In addition to placement of buildings on lots and lot arrangements, the clustering of density is also encouraged to establish the open space areas designated on the plan. The intent is to allow smaller individual lots where open space is dedicated to public use to maintain the same density as specified in the plan. Refer to Plates 10 – 12 for illustrations of cluster concept. The resultant lot size would be greater than an acre.

CONSERVATION

The project developer should utilize methods of energy conservation and the use of ultra-low water demand features. All residential units shall incorporate Sierra Pacific Power Company's "Good Cents" standards in design construction. Table 2 provides a list of mandatory and recommended energy and water conservation features. Building design and orientation should be considered in conservation of energy. All buildings will be designed and orientated to benefit from passive solar heating.

ARCHITECTURE

All buildings must incorporate a "western ranch" theme or identity architecturally, in a manner that is complimentary and compatible with the Plan Area and its surroundings. No mobile homes are allowed except for construction purposes within the S.P.A. To enhance the development and maintain the rural character, buildings and structures shall adhere to the following guidelines:

Exterior Walls and Trims

Wood, brick, stucco, or stone material finish are required for all exterior walls. Siding must run one consistent direction on all exterior walls. Exterior colors must be earth tone and harmonize with the surrounding landscape. No true primary or secondary colors are allowed, nor any gloss or semi-gloss finishes. All reflective metal such as chimney stacks, flashings, exhaust vents and pipes, must be painted to match or blend with surrounding materials. All draperies and window coverings should also be of materials and colors which harmonize with the surroundings. Aluminum windows, door frames, solar panels, and skylights must be bronzed or anodized. Steel windows and door frames must be painted to match or blend with surrounding materials.

Animals

On lots greater than one acre, horses or 4-H animals will be allowed, provided they are not adjacent to the central spine road, village center, community facilities center, or school sites. No lot shall have more than two such animals. All other lots may have the usual household pets provided they are not kept for commercial purposes and are kept reasonably confined so as not to become a nuisance. Horses, animals, and household pets shall not unreasonably interfere with the comfort, privacy, or safety of other properties. No lot shall have more than four household pets. Animals shall be kept in accordance with Washoe County ordinances.

If horses/4-H animals are to be allowed in an area, that area shall be designated on all tentative and final maps for those uses and sufficient additional water rights dedicated to provide irrigated pasture in which the animals must be kept when not stabled.

TABLE 1

AVERAGE LOT SIZE-	1-1½ ACRE LOT	2½+ ACRE LOT
TYPICAL LOT SIZE	120'x365'	150'x725'
MINIMUM FRONT YARD SETBACK	40'	50'
MINIMUM SIDE YARD SETBACK	15'	15'
REQUIRED # OF TREES IN FRONT	5	5
BUILDING ENVELOPE	125'	200'
TRANSITION ZONE	100'	--
REQUIRED # OF TREES IN TRANSITION ZONE	5	--
OPEN SPACE (TRAIL CORRIDOR)	100'	--
PASTURE/HORSE AREA	--	400'-500'

TABLE 2

MANDATORY CONSERVATION FEATURES
State-of-the-art water saving fixtures, shower heads, and toilets.
Dual glaze ¼" air space windows and sliding glass doors.
Thermostat setback timers.
Sierra Pacific Power Company's "Good Cents" standards.
RECOMMENDED CONSERVATION FEATURES
State-of-the-art water saving appliances such as washing machines and dishwashers.
The use of trash compactors to limit the use of garbage disposals in sinks.
Solar water heater.
Zoned heating controls.
Plumbed gray water storage and distribution for irrigation of landscaping.
Passive solar design.

Roofs

Roofing materials shall be of a color that harmonizes with the surrounding area and color scheme of the structure. Flat roofs should be discouraged.

Mailboxes

Architectural structures of natural materials and natural colors shall be provided for grouped neighborhood mailboxes. The grouped neighborhood boxes of 15 or less per site shall be placed at neighborhood entry points, with adequate access off main roadways.

Garbage and Refuse Disposal

There shall be no burning of trash, garbage or other like household refuse, nor shall any property owner accumulate on their lot junked or unsightly vehicles or litter, refuse or garbage, except in receptacles provided for such purposes.

Concealment of Fuel Storage Tanks and Trash Receptacles

Fuel storage tanks and every receptacle for ashes, trash, rubbish or garbage shall be so placed and kept as not to be visible from any street, lot, parcel, or open space in the S.P.A., except at the times when refuse collections are made.

Antennas

Satellite discs and home radio antennas shall be screened from view from any adjacent parcels, streets, or open space by locating in rear yards behind screen fences at a minimum.

Travel Trailers, Motor Homes and Boat Storage

Travel trailers, motor homes (R.V.), or boats and trailers shall be stored within the building envelope and screened from any street, lot, parcel, or open space area by screen fences. If stored in side yards, the minimum side yard shall be 12 feet.

Nuisances

No noxious or offensive activities, odors, or nuisances shall be permitted on any lot or parcel in the development. No refuse, unsightly or abandoned vehicles, debris, noxious material, discarded personal effects, and construction materials not for immediate use shall be permitted on any lot or portion thereof. It is incumbent upon all property owners to maintain their lots and yards in a neat, orderly and well-groomed manner, whether said lots are vacant or improved.

Completion of Construction

Construction of any improvement, once commenced, shall be pursued diligently to completion. Improvements not so completed or upon which construction has ceased for ninety (90) consecutive days or which have been partially or totally destroyed and not rebuilt within a reasonable period shall be deemed nuisances. The County may remove any such nuisance or repair or complete the same at the cost of the owner provided the owner has not commenced required work within thirty (30) days from posting a notice to commence such work upon the property. Such notice shall state the steps to be taken to eliminate the nuisance.

Maintenance of Lots

All lots and parcels, whether vacant or improved, occupied or unoccupied, and any improvements placed thereon, shall at all times be maintained in such manner as to prevent their becoming unsightly, unsanitary, or a hazard to health. If not so maintained, the County, after giving thirty (30) days written notice, will undertake such work as may be necessary and desirable to remedy the unsightly, unsanitary or hazardous condition, the cost of which shall be assessed to the lot.

Clothes Lines

No clothes line shall be constructed or erected which would be visible from any street, other lot, or open space.

Garage

Every single family dwelling unit constructed within the S.P.A. shall have on the same lot or parcel enough covered and completely enclosed automobile storage space for at least two automobiles. On 1 acre or larger lots, garage doors shall be encouraged to face side yards away from streets.

LANDSCAPING

Landscape design should fit the particular use and blend with the natural environment. The lot concept limits the area in which a home owner may provide landscaping. The plant material must be selected from a predetermined list incorporated in this plan. (Refer to Appendix C.) The plant selection includes only drought tolerant and low water demand material. (Refer to Basis for Residential Allocation of Water Section.) These factors contribute to a decreased average annual residential demand that is mandatory for implementation of this plan.

A specified number of trees are required in the front yard setback and transition zone to provide a "sense of place". Plant material selected from the incorporated list, per neighborhood, should be kept similar to strengthen neighborhood unity and identity.

Selection of materials should contain a mixture of plants with fast, medium, and slow growth rates and a variety of sizes should be planted to provide a more natural appearance.

The use of plants around dwelling units to reduce heating and cooling needs is encouraged. Evergreens along the north and west act as a windbreak to deflect winter winds. Deciduous trees planted on the south around the perimeter of the unit are encouraged to provide summer shade while allowing winter sun. Creation of earth berms to the windward side can also reduce heat loss.

Drainageways should be lined with native wildflowers, grasses, shrubs, and rocks and boulders to slow velocities. They will be graded to resemble a natural drainage swale and incorporated in the overall design. (Refer to Drainageway Design Guidelines Plates 3 and 4 in the Conservation Section.)

Irrigation of plant material will utilize drip irrigation and other water conservation features as practical. The use of plumbed gray water storage systems will be investigated with the Health Department.

Within nine (9) months of completion of the main dwelling unit, each lot or parcel shall be completely landscaped consistent with the landscape design guidelines and water budget incorporated in this plan. All landscaping shall be maintained to harmonize with and sustain the attractiveness of the development.

FENCING

All property lines from single family dwelling units to the street shall be kept free and open.

A solid privacy fence may be constructed within the building envelope and limited to the rear of the house. Side yards will not be enclosed with a privacy fence.
Fences shall be constructed of wood or masonry material and no fence will be over six (6) feet in height. Developers will establish a typical type or style privacy fence per neighborhood to promote neighborhood unity.
The transition zone and side yard may be fenced with open ranch style fencing. Fencing will be consistent within all neighborhoods. There shall be no chainlink, woven wire or any type of wire fence within the development except for back yard pet enclosures, swimming pools or tennis courts. Chain link fencing will be coated.

SIGNAGE

On public streets the style of signage will be unique to the Specific Plan Area. It will be uniform in style throughout the area. Subdivision entry signage shall be limited to monument signs of native materials and in conformance with design guidelines set forth in the Commercial Section of the plan (refer to Plates 13 and 14).

EXTERIOR LIGHTING

The functional objectives in providing exterior area lighting are to illuminate areas necessary for safe and comfortable use. In certain situations, area lighting can add to the aesthetic appeal of a site by highlighting architectural features of a building or illuminating pathways and landscape

plantings. In these instances, only the special features of a building or landscape should be illuminated. It should be noted that the standards and guidelines contained in this section address area lighting on individual properties, and not overhead street lighting along public and private rights-of-way.

On public streets the style of lighting standard will be unique to the Specific Plan Area. It will be decorative and uniform in style and intensity throughout the area. Lighting shall be directed downward with no splay of lighting directed outward.

Standards

1. Exterior lights shall not blink, flash or change intensity. String lights, building or roofline tube lighting, reflective or luminescent wall surfaces are prohibited.

2. Exterior lighting shall not be attached to trees except for the Christmas season.

3. Driveway, walkway, and building lights shall be directed downward.

4. Fixture mounting height shall be appropriate to the purpose.

5. Illumination for aesthetic or dramatic purposes of any building or surrounding landscape utilizing exterior light fixtures projected above the horizontal is prohibited.

6. Seasonal lighting displays and lighting for special events which conflict with other provisions of this section may be permitted on a temporary basis.

Guidelines

1. Lighting Design Exterior lighting should be designed as an integral part of the architecture and landscape and located in a manner that minimizes the impact of lighting upon adjacent structures and properties.

2. Lighting Levels Avoid consistent overall lighting and overly bright lighting. The location of lighting should respond to the anticipated use and should not exceed the amount of light actually required by users. Lighting for pedestrian movement should illuminate entrances, changes in grade, path intersections, and other areas along paths which, if left unlit, would cause the user to feel insecure. Lighting suppliers and manufacturers have lighting design handbooks which can be consulted to determine fixture types, illumination needs and light standard heights.

3. Fixture Design Exterior lighting fixtures should be simple in design and should be well-integrated with other architectural site features.

4. Structural Lighting Night lighting of building exteriors should be done in a selective fashion: highlight special recognizable features; keynote repeated features; or use the play of light and shadow to articulate the facade. The purpose of illuminating the building should be to add visual interest and support building identification. Harsh overall lighting of a facade tends to flatten features and diminish visual interest.

5. Lighting Height As a rule, the light source should be kept as low to the ground as possible while ensuring safe and functional levels of illumination. Area lighting should be directed downward with no splay of lighting directed off-site. The height of light fixtures or standards must meet the County standards. Direct light downward in order to avoid sky lighting. Any light source over 10 feet high should incorporate a cut-off shield to prevent the light source from being directly visible from areas off-site. The height of luminaries should be in scale with the setting and generally should not exceed 10-12 feet.

UTILITIES

Undergrounding shall be encouraged for lots from 1 to 2½ acres. Overhead utilities will be acceptable on lots larger than 2½ acres. All individual services to each unit for all lot sizes shall be undergrounded from the neighborhood service line.

COMMERCIAL/COMMUNITY FACILITIES

DESIGN GUIDELINES

All commercial centers and community facilities shall be designed and constructed to create a desirable environment which relates to the surrounding area (refer to Plate 17).

ARCHITECTURE

All buildings must incorporate a "western ranch" theme or identity architecturally, in a manner that is complimentary and compatible with the Plan Area and its surroundings. No mobile homes are allowed except for construction purposes within the S.P.A. To enhance the development and maintain the rural character, buildings and structures shall adhere to the following guidelines:

Exterior Walls and Trims

Wood, brick, stucco, or stone material finish are required for all exterior walls. Siding must run one consistent direction on all exterior walls. Exterior colors must be earth tone and harmonize with the surrounding landscape. No true primary or secondary colors are allowed, nor any gloss or semi-gloss finishes. All reflective metal such as chimney stacks, flashings, exhaust vents and pipes, must be painted to match or blend with surrounding materials. All draperies and window coverings should also be of materials and colors which harmonize with the surroundings. Aluminum windows, door frames, solar panels and skylights must be bronzed or anodized. Steel windows and door frames must be painted to match or blend with surrounding materials.

Roofs

Roofing materials shall be of a color that harmonizes with the surrounding area and color scheme of the structure. Flat roofs should be discouraged. Roof structures should provide screening of mechanical equipment.

Mailboxes

Mailboxes and newspaper holders shall be of natural materials and natural colors.

Garbage and Refuse Disposal

There shall be no burning of trash, garbage or other like household refuse without a permit from the County, nor shall any property owner accumulate on their lot junked or unsightly vehicles or litter, refuse or garbage, except in receptacles provided for such purposes.

Concealment of Fuel Storage Tanks and Trash Receptacles

Fuel storage tanks and every receptacle for ashes, trash, rubbish or garbage shall be so placed and kept as not to be visible from any street, lot, parcel, or open space in the S.P.A., except at the times when refuse collections are made.

Antennas

Satellite discs, shall be screened from view from any adjacent parcels, streets, or open space.

Nuisances

No noxious or offensive activities, odors, or nuisances shall be permitted on any lot or parcel in the development. No refuse, unsightly or abandoned vehicles, debris, noxious material, discarded personal effects, and construction materials not for immediate use shall be permitted on any lot or portion thereof. It is incumbent upon all property owners to maintain their lots and yards in a neat, orderly and well-groomed manner, whether said lots are vacant or improved.

Completion of Construction

Construction of any improvement, once commenced, shall be pursued diligently to completion. Improvements not so completed or upon which construction has ceased for ninety

(90) consecutive days or which have been partially or totally destroyed and not rebuilt within a reasonable period shall be deemed nuisances. The County may remove any such nuisance or repair or complete the same at the cost of the owner provided the owner has not commenced required work within thirty (30) days from posting a notice to commence such work upon the property. Such notice shall state the steps to be taken to eliminate the nuisance.

Maintenance of Lots

All lots and parcels, whether vacant or improved, occupied or unoccupied, and any improvements placed thereon, shall at all times be maintained in such manner as to prevent their becoming unsightly, unsanitary, or a hazard to health. If not so maintained, the County, after giving thirty (30) days written notice, will undertake such work as may be necessary and desirable to remedy the unsightly, unsanitary or hazardous condition, the cost of which shall be assessed to the lot.

LANDSCAPING

Minimum Coverage

The minimum landscaped coverage per property shall be 20% in the commercial zones and 20% for the community facilities, incorporating the plant list (refer to Appendix C) and low water demand principles and techniques. (Refer to Water Resources Section.)

Setbacks Adjacent to Right of Ways

Setbacks from the Pyramid Highway right-of-way will be a minimum of 300 feet. Setbacks from an interior roadway right-of-way will be a minimum of 50 feet. For the purpose of providing screening from roadways, the abutting frontages shall have undulating landscaped berms. The height of the berms shall be determined with each site plan review.

Plant Material

All plant material shall conform to the list and guidelines incorporated in the Residential Section of this plan.

Irrigation

All landscaped areas shall be irrigated with permanent automatic irrigation systems. Drip irrigation should be utilized where practical. All irrigation systems will be placed underground.

Parking Lots

Trees shall be planted throughout the parking lot to insure that within 15 years after establishment of the parking lot at least 50% of the parking area will be shaded at noon at the time of the summer solstice.

Side and Rear Yards

All side and rear yards not utilized for parking or storage shall be landscaped. A minimum of 20 feet of landscape buffer shall be placed on all interior property lines with a minimum of one tree every 30 feet.

Installation

Prior to issuance of a building permit, irrigation and landscaping shall be installed or a security bond shall be posted to insure installation as soon as climatically feasible.

PEDESTRIAN CIRCULATION

Primary and secondary walkways shall be designed indicating a relationship with street access, parking areas, structures, and adjacent uses. Walkways and bikeways located in the landscaped setbacks shall be provided access separate from vehicular access. All pedestrian ways will be designed with public health and safety in mind.

PARKING

Parking shall be provided on-site and in accordance with Washoe County standards.

SIGNAGE

Signage will be used for business and activity center identification. Signage will be encouraged which, by design, is integrated with and harmonious to the buildings and site that it occupies.

Signage will be included on facades of buildings and illuminated with indirect lighting.

The use of standing or hanging signage will be minimized.

Signage structures will be made of natural materials.

Simple painted or bas relief lettering will be emphasized.

A uniform scheme of colors, materials and style will be utilized in each center.

Flashing, animated signs will be prohibited.

Projecting and wall signs are prohibited.

Each center will be allowed two area identification signs. Area identification signs may not exceed 32 square feet on each side and may not exceed 4 feet in height. Area signs may be placed in the setback area, but must be located a minimum of five feet from the public right-of-way and access driveway.

Each tenant sign may not exceed 16 square feet.

Each occupant will be permitted to place upon each entrance to its premises not more than 144 square inches of lettering indicating hours of business.

EXTERIOR LIGHTING

Lighting shall be designed in such a manner as to provide safety and comfort for occupants of the development and the general public.

Exterior lights shall not blink, flash or change intensity. String lights, building or roofline tube lighting, reflective or luminescent wall surfaces are prohibited.

Parking lot, walkway, and building lights shall be directed downward.

Outdoor lighting shall be used for purposes of illumination only, and shall not be designed for, or used as, an advertising display. Illumination for aesthetic or dramatic purposes of any building or surrounding landscape utilizing exterior light fixtures projected above the horizontal is prohibited.

Exterior lighting should be designed as part of the architectural and site design of a project and consistent throughout the project.

Overall lighting levels will be compatible with neighborhood ambient levels and color will be uniform throughout the development.

Support structures for lighting will be made of natural materials unless unpractical.

Lights will be placed where most useful rather than trying to illuminate the entire area. A few well placed low intensity lights can provide the necessary illumination and provide an energy efficient system.

Minimal energy consumption will also be a factor in lighting type selection.

Soft, indirect lighting will be employed where feasible.

Night lighting of building exteriors should be done in a selective fashion: highlight special recognizable features; keynote repeated features; or use the play of light and shadow to articulate the facade. The purpose of illuminating the building should be to add visual interest and support building identification. Harsh overall lighting of a facade tends to flatten features and diminish visual interest.

As a rule, the light source should be kept as low to the ground as possible while ensuring safe and functional levels of illumination. Area lighting should be directed downward with no splay of lighting directed off-site. The height of light fixtures or standards must meet the County height limitations. Direct light downward in order to avoid sky lighting. Any light source over 10 feet high should incorporate a cut-off shield to prevent the light source from being directly visible from areas off-site. The height of luminaries should be in scale with the setting and generally should not exceed 10-12 feet.

Winter seasonal lighting displayed in commercial areas should use miniature light strands which are neatly strung and securely attached to buildings, fences, shrubs, or trees. Any color of

lights may be used; however, the lights should not be used to create advertising messages or signs (e.g. spelling out the name of a business is not permitted). Seasonal lighting displays should not blink or flash. Winter seasonal lighting displays should only be displayed from Thanksgiving through January.

Placement and style will be determined by function; for example, pedestrian and slow vehicular lighting will be less intense and close to the ground.

MISCELLANEOUS

Utility connections, meter boxes, etcetera, should be screened from view and located at the rear or side of the building, integrated into the architectural design by using similar materials and colors. The location of these elements, including pad-mounted transformers, should be coordinated with the utility company early in the site design process.

All utilities except main area feeder lines should be placed underground. Overhead utilities shall be avoided.

Exterior equipment and service areas should have a good function placement, and should avoid conflict with other uses on the site or on adjoining sites.

Service areas near the building should be screened with a wall of the same construction and materials as the building wall. Ductwork should be painted to match the color of the roof or building if a screen is not appropriate.

All air conditioning units, ventilating equipment, other mechanical equipment and communications equipment shall be completely screened or enclosed with materials compatible with the building siding.

Temporary structures, including, but not limited to, trailers, mobile homes and other structures not affixed to the ground, are permitted only during construction of a permanent building. These shall be installed at the start of construction and shall be removed promptly upon completion of the permanent building. Such structures shall be as inconspicuous as possible and shall cause no inconvenience to the general public.

Trash facilities shall be located in the most inconspicuous manner possible. All exterior facilities shall be located away from residential uses and shall be screened by a wall of material similar to and compatible with the building it serves.

All fuel storage tanks shall be above ground with adequate spill storage area to comply with current County and E.P.A. standards. All storage tanks shall be screened and landscaped from view.

OFFICE COMMERCIAL/ BUSINESS PARK

DESIGN GUIDELINES

The purpose of this section is to encourage the creative and innovative use of materials and methods of construction and site planning to integrate the business park into the rural setting of Warm Springs Valley.

Acceptable setbacks, access, parking, loading, screening and buffering requirements are illustrated on the example site plan incorporated in the plan. (Refer to Plate 18.)

ARCHITECTURE

Building design should compliment and harmonize with neighboring buildings. Design compatibility can be achieved through similarity of form, height, roof shapes, scale, materials, color, or pattern of openings.

A building or project should be in scale with its immediate surroundings and with the area. A large building can be reduced in bulk by dividing it into component parts that reflect the scale of adjacent buildings.

Building color should be compatible with its surroundings. Its color should not become the "signing" for the project by competing for attention. Subdued colors are preferred for the main color of a building. The general overall atmosphere of color shall be earth tones.

Building design should be coordinated on all elevations in regards to color, materials, form and detailing in order to achieve design harmony and integrity. Elevations need not look alike for a sense of overall architectural continuity to be present.

The facade should be designed to accommodate signage, so that tenants will have advertising without detracting from the appearance of the structure. Maximum building height shall be 25 feet.

Exterior Wall Materials

Finished building materials shall be applied to all sides of a building, including trash enclosures and mechanical and communications equipment screens.

Tilt-up concrete construction technique shall be allowed, only if full compliance with all of the other conditions of the guidelines is maintained. The intent is not to allow for full tilt-up concrete structures (like a warehouse facility), but only to provide that tilt-up concrete materials may form a portion of the surface area of the structures; e.g. to provide for sheer walls, decorative forms, etcetera, with other construction materials making up the majority of the surface.

Exposed concrete block shall not be acceptable for exterior surfaces. The intent is not to preclude such concrete block construction as split face block, texture block, slump stone or other similar material.

The effect of exterior wall materials shall be compatible with those used on all other buildings in the development. Examples of acceptable exterior wall materials are stucco, concrete, wood, glass, metals and brick.

Roof Projections and Design

All air conditioning units, ventilating equipment, other mechanical equipment and communications equipment shall be completely screened or enclosed with materials compatible with the building siding.

Projections shall be painted to match the roof or building.

TEMPORARY STRUCTURES

Temporary structures, including, but not limited to, trailers, mobile homes and other structures not affixed to the ground, are permitted only during construction of a permanent building. These shall be installed at the start of construction and shall be removed promptly upon completion of the permanent building.

Such structures shall be as inconspicuous as possible and shall cause no inconvenience to the general public.

LOADING AREAS

Truck loading dock(s) shall be designed as an integral part of the structure(s) and shall not be oriented to any public right-of-way, freeway, or adjacent residential area. The intent is to assure that these facilities are located in the most inconspicuous manner possible.

PARKING

Parking for business will be provided on site and in conformance with Washoe County standards.

OUTSIDE STORAGE

Open-air storage of materials, supplies, equipment, mobile equipment, finished or semi-finished products or articles of any nature shall be located in rear or side yards only and must be screened from view from adjacent property or public right-of-way.

Outdoor storage and work areas shall be screened by a solid fence, wall, or hedge, 6 feet in height. The area being screened should not be visible through the screen. Chainlink fencing is not recommended unless combined with landscaping and wood slats. Equipment and materials should not be stacked higher than the top of the fence. Landscaped areas should be provided in front of the screen if it is within 20 feet of the street.

Fuel Storage Tanks

All fuel storage tanks shall be above ground with adequate spill storage area to comply with current County and E.P.A. standards. All storage

tanks shall be screened and landscaped from view.

UTILITY CONNECTIONS

Utility connections, meter boxes, etcetera, should be screened from view and located at the rear or side of the building, integrated into the architectural design by using similar materials and colors. The location of these elements, including pad-mounted transformers, should be coordinated with the utility company early in the site design process.

All utilities extending from street to building should be placed underground. Overhead utilities should be avoided whenever possible.

Trash disposal areas should be enclosed by a fence or wall, a minimum six (6) feet in height. The area should be landscaped and equipped with doors and hardware of durable materials. The pad in front of the trash enclosure should be reinforced to carry the weight of garbage trucks as they lift the containers.

LANDSCAPING

Minimum Coverage

The minimum landscaped coverage per property shall be 25% in the business park zone incorporating the plant list (refer to Appendix C) and xeriscape principles and techniques. (Refer to Water Resources Section.)

Setbacks Adjacent to Right of Ways

Setbacks from the Pyramid Highway right-of-way will be a minimum of 300 feet. Setbacks from an interior roadway right-of-way will be a minimum of 50 feet. For the purpose of providing screening from roadways, the abutting frontages shall have undulating landscaped berms. The height of the berms shall be determined with each site plan review.

Plant Material

All plant material shall conform to the list and guidelines incorporated in the Residential Section of this plan.

Irrigation

All landscaped areas shall be irrigated with permanent automatic irrigation systems. Drip irrigation should be utilized where practical. All irrigation systems will be placed underground.

Parking Lots

Trees shall be planted throughout the parking lot to insure that within 15 years after establishment of the parking lot at least 50% of the parking area will be shaded at noon at the time of the summer solstice.

Side and Rear Yards

All side and rear yards not utilized for parking or storage shall be landscaped. A minimum of 20 feet of landscaping shall be placed on all interior property lines with a minimum of one tree every 30 feet. A six foot masonry wall shall be placed along the property line of abutting residentially designated lands.

Installation

Prior to issuance of a building permit, irrigation and landscaping shall be installed or security shall be posted to insure installation as soon as climatically feasible.

EXTERIOR LIGHTING

Lighting shall be designed in such a manner as to provide safety and comfort for occupants of the development and the general public.

Lighting design shall not produce hazardous and annoying glare to motorists, building occupants, and adjacent residents.

Exterior lighting should be designed as part of the architectural and site design of a project and consistent throughout the project.

Overall lighting levels will be compatible with neighborhood ambient levels and color will be uniform throughout the development.

Support structures for lighting will be made of natural materials unless unpractical.

Lights will be placed where most useful rather than trying to illuminate the entire area. A few well placed low intensity lights can provide the necessary illumination and provide an energy efficient system.

Minimal energy consumption will also be a factor in lighting type selection.

Soft, indirect lighting will be employed where feasible.

Placement and style will be determined by function; for example, pedestrian and slow vehicular lighting will be less intense and close to the ground.

SIGNAGE

Signage will be used for business and activity center identification. Signage will be encouraged which, by design, is integrated with and harmonious to the buildings and site that it occupies.

Signage will be included in facades of buildings and illuminated with indirect lighting, where feasible.

The use of standing or hanging signage will be minimized to the extent feasible.

Signage structures will be made of natural materials.

Simple painted or bas relief lettering will be emphasized.

A uniform color scheme and style will be utilized in each center.

Flashing, animated signs will be prohibited.

Projecting and wall signs are prohibited.

Each business park will be allowed two area identification signs. Area identification signs may not exceed 32 square feet on each side and may not exceed 4 feet in height. Area signs may be placed in the setback area, but must be located a minimum of five feet from the public right-of-way and access driveway.

Each tenant sign may not exceed 16 square feet. Each occupant will be permitted to place upon each entrance to its premises not more than 144 square inches of lettering indicating hours of business.

TRANSPORTATION

The Regional Transportation Commission has provided Washoe County with a transportation analysis of the Regional area based on a partial buildout of the SPA by the year 2007. The projected community growth section contained in this Development Standards Handbook Framework was used to project average daily traffic (ADT) for the year 2007 and at buildout. A preliminary traffic study has determined the level of improvements that will be required to serve the SPA by 2007 and at buildout. (Refer to Plate 19.)

In terms of responsibilities for the improvements specifically within the SPA, the property owners identified in the Appendix-List of Property Owners or subsequent owners/ developers shall dedicate right-of-way at the time development occurs adjacent to their properties for the ultimate widths of the streets at proposed buildout. The owners/developers shall also share the construction expenses for the identified central spine minor arterial street improvements within the boundaries of the SPA, shown on Plate 19 (Streets and Highways System Plan) on a proportionate basis with other developers as appropriate.

Developers shall assume the financing and construction of local, collector and two lanes of the central spine minor arterial streets within the boundaries of the SPA serving their projects. Responsibility for improvements needed outside of the SPA, identified by Washoe County, the General Improvement District or Regional Transportation Commission, should be handled through other measures such as a transportation impact fee in which all property owners/ developers would pay their proportionate share. Responsibility for existing roadway deficiencies shall be financed by the appropriate governmental entity.

All Specific Plan Area development adjacent to existing roadways and obtaining access from them shall provide improvements

adjacent to the proposed development to County standards and in accordance with the alternative street section design included in this Development Standards Handbook Framework as Plates 20-22.

In terms of standards and design, where appropriate, the County should encourage alternative street sections to allow for landscaped medians and separated pedestrian and bicycle pathways in lieu of sidewalks. Curvalinear street designs should also be encouraged. In areas zoned one acre or greater, street sections will be built to county standards with a paved street section and gravel shoulders. Refer to street section designs included in this Development Standards Handbook Framework as Plates 20-22 (Alternative Street Sections).

To ensure efficient functioning of the street system, direct access onto major arterials will be restricted and turning movements limited through the use of raised medians, acceleration and deceleration lanes, and signals. Signals, however, should be limited on arterial streets and intersection spacing should be 1/4 mile or greater. The specific land use plan contained in this Development Standards Handbook Framework illustrates the intent of the design guidelines. The County should also encourage the use of joint driveways for commercial developments and maintain appropriate driveway separation spacing from other driveways and intersections.

PRELIMINARY TRAFFIC ANALYSIS

The following was the basis used for the preliminary traffic analysis for the plan.

Potential build-out from Warm Springs outside SPA:

1. Access

   a. 40% Whiskey Springs Road
   b. 60% Ironwood

2. ADT Outside SPA

   a. Units: 1,200
   b. ADT (8.6 trips/unit per R.T.C. trip generation)

      ADT = 9,729 use 9,730
      Whiskey Springs: 3,880 ADT
      Ironwood: 5,840 ADT

Village Center assumed to be all pass-by traffic.

PHASING AND IMPLEMENTATION

It will be the responsibility of every owner or developer of land in the Specific Plan Area to construct all roadways to serve each parcel/dwelling unit created. All roadways constructed shall be in accordance with County standards and the alternative street sections noted on Plates 20-22. The construction cost of all Specific Plan Area facilities (Spine Road) noted on Plate 19 will be shared equally by all owners/developers in the Specific Plan Area on a per parcel/dwelling unit basis. Existing roadways upgraded to County standards may be utilized by development in the interim until connection to the Spine Road can be obtained. Any development/parcelization adjacent to the proposed Specific Plan Area Spine Road shall construct two lanes that serve the development at the time other adjacent roadways are constructed. Such construction is entitled to a credit against per parcel/unit fees (refer to Financing Plan).

TABLE 3

NEW DEV ELOPMENT ADT @ 8.6 TRIPS/UNIT/R.T.C.			
Area	**Units**	**Comm. Ac.**	**ADT**
1	287	0	2,468
2	138	10	1,137
3	93	5	766
4	78	0	671
5	162	5	1,334
6	464	0	3,990
7	178	0	1,531
8	140	0	1,204
9	162	0	1,393
10	39	0	335

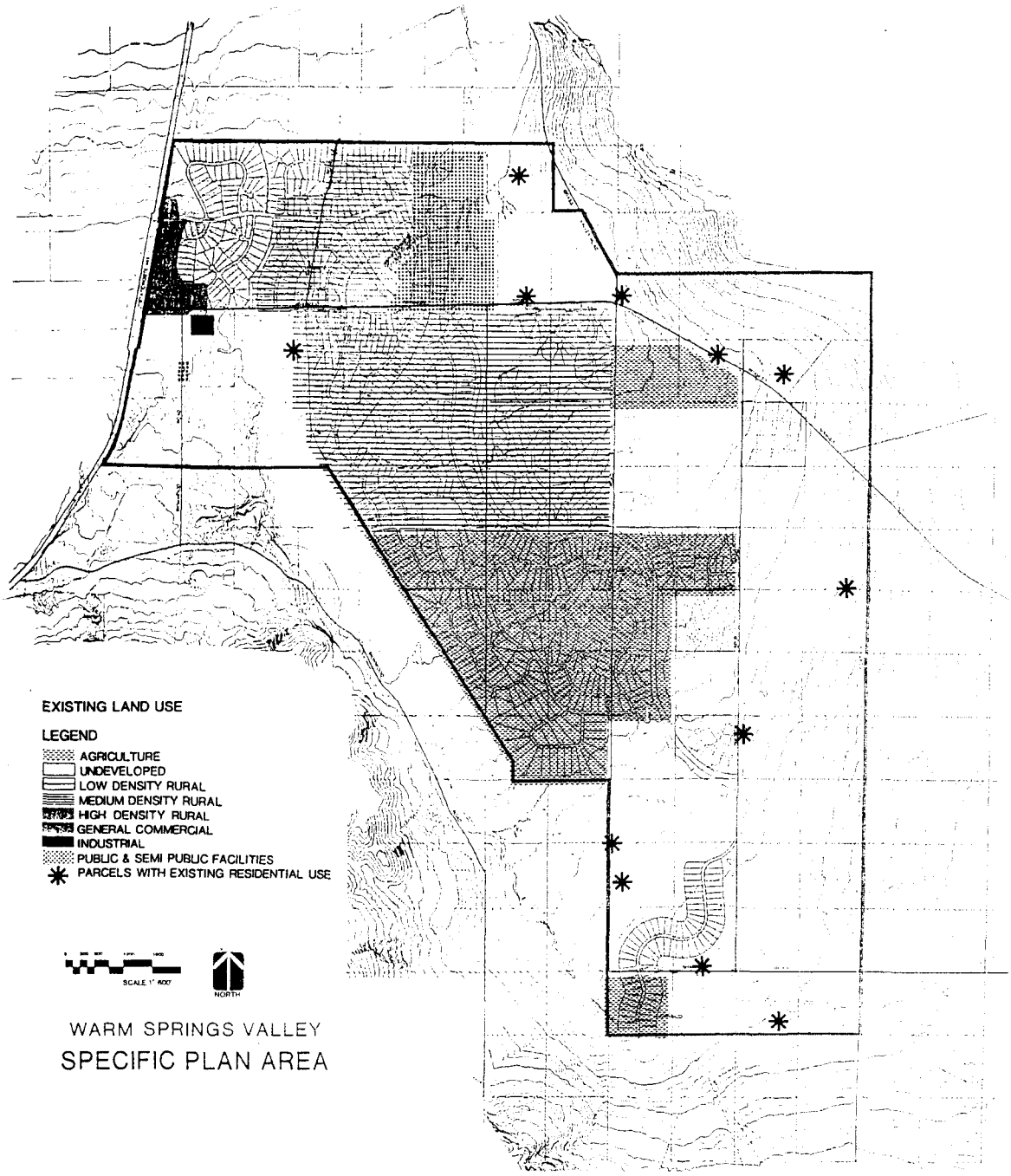
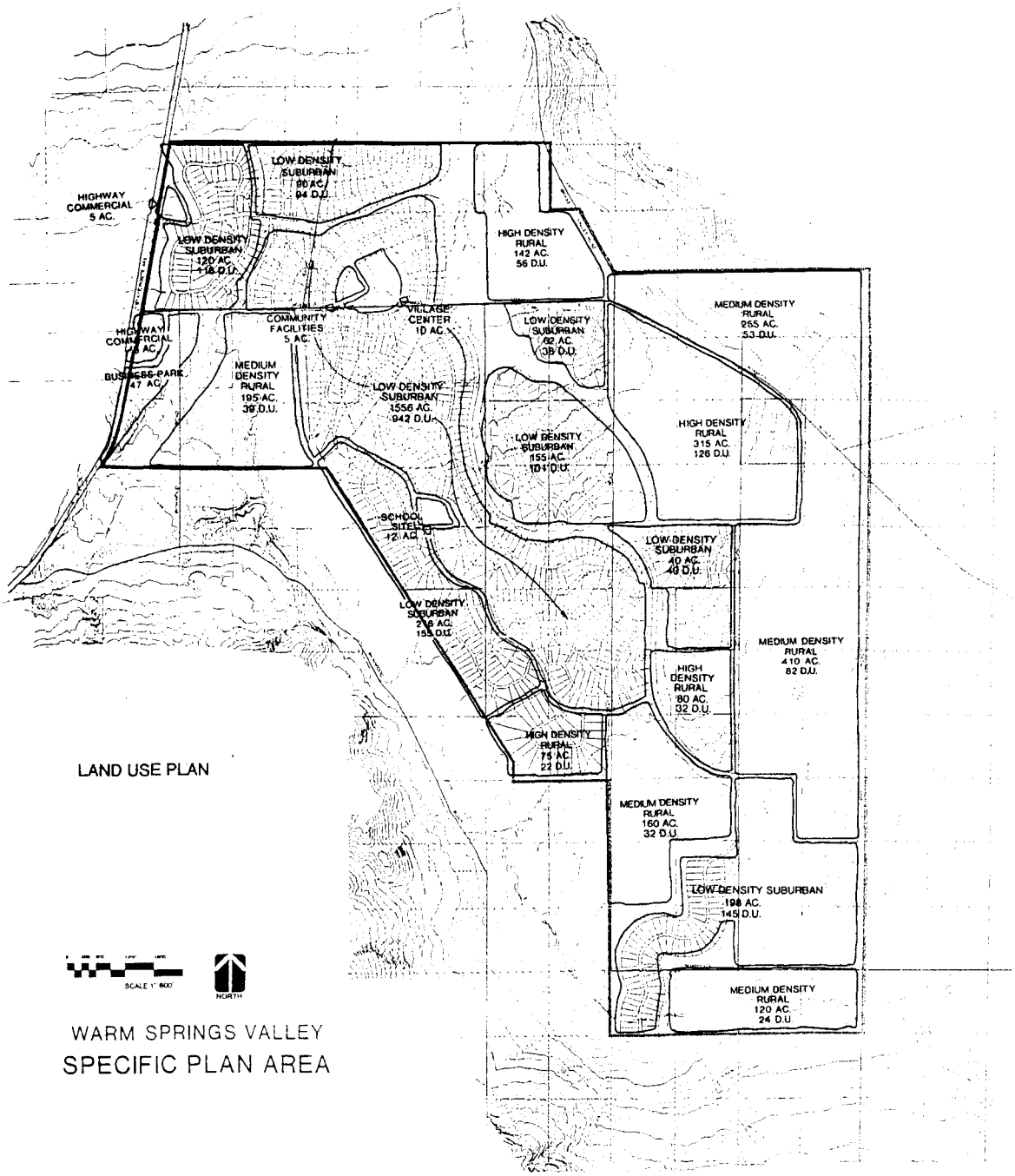

EXISTING LAND USE
LEGEND
AGRICULTURE
UNDEVELOPED
LOW DENSITY RURAL
MEDIUM DENSITY RURAL
HIGH DENSITY RURAL
GENERAL COMMERCIAL
INDUSTRIAL
PUBLIC & SEMI PUBLIC FACILITIES
PARCELS WITH EXISTING RESIDENTIAL USE
SCALE 1" = 800'
NORTH
WARM SPRINGS VALLEY
SPECIFIC PLAN AREA

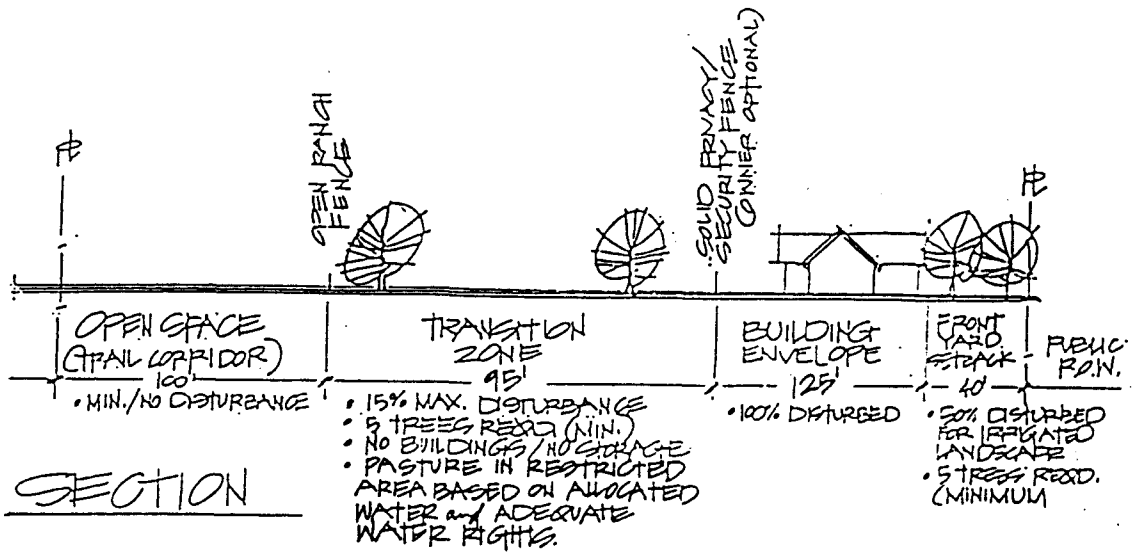
PLATE 6



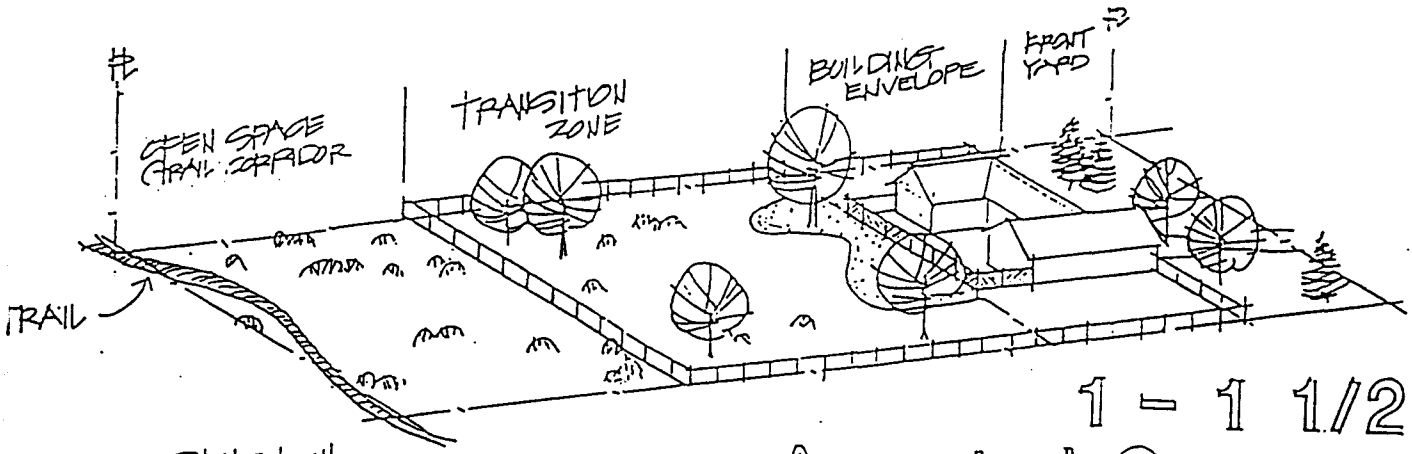
LAND USE PLAN

WARM SPRINGS VALLEY
SPECIFIC PLAN AREA

PLATE 7

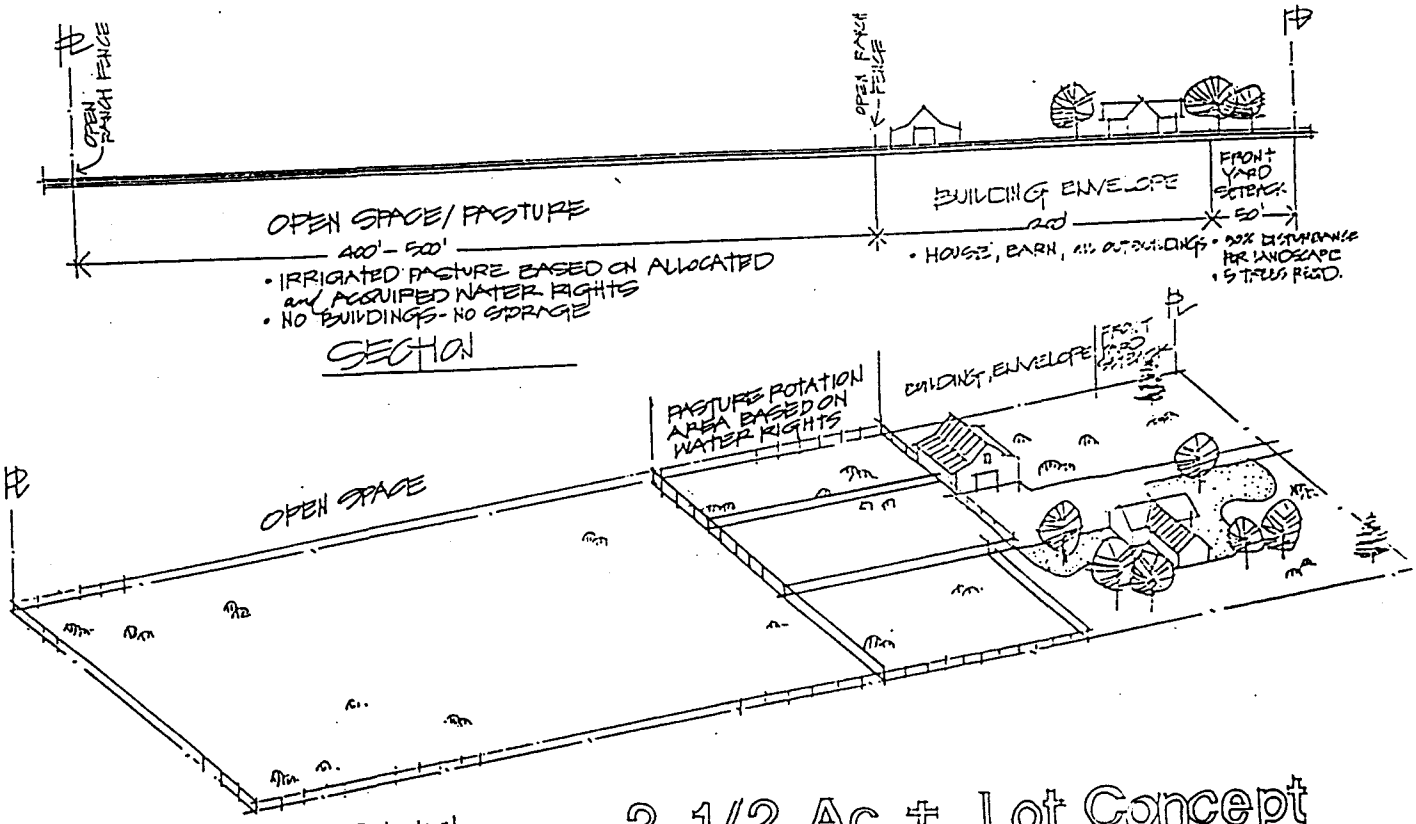


SECTION

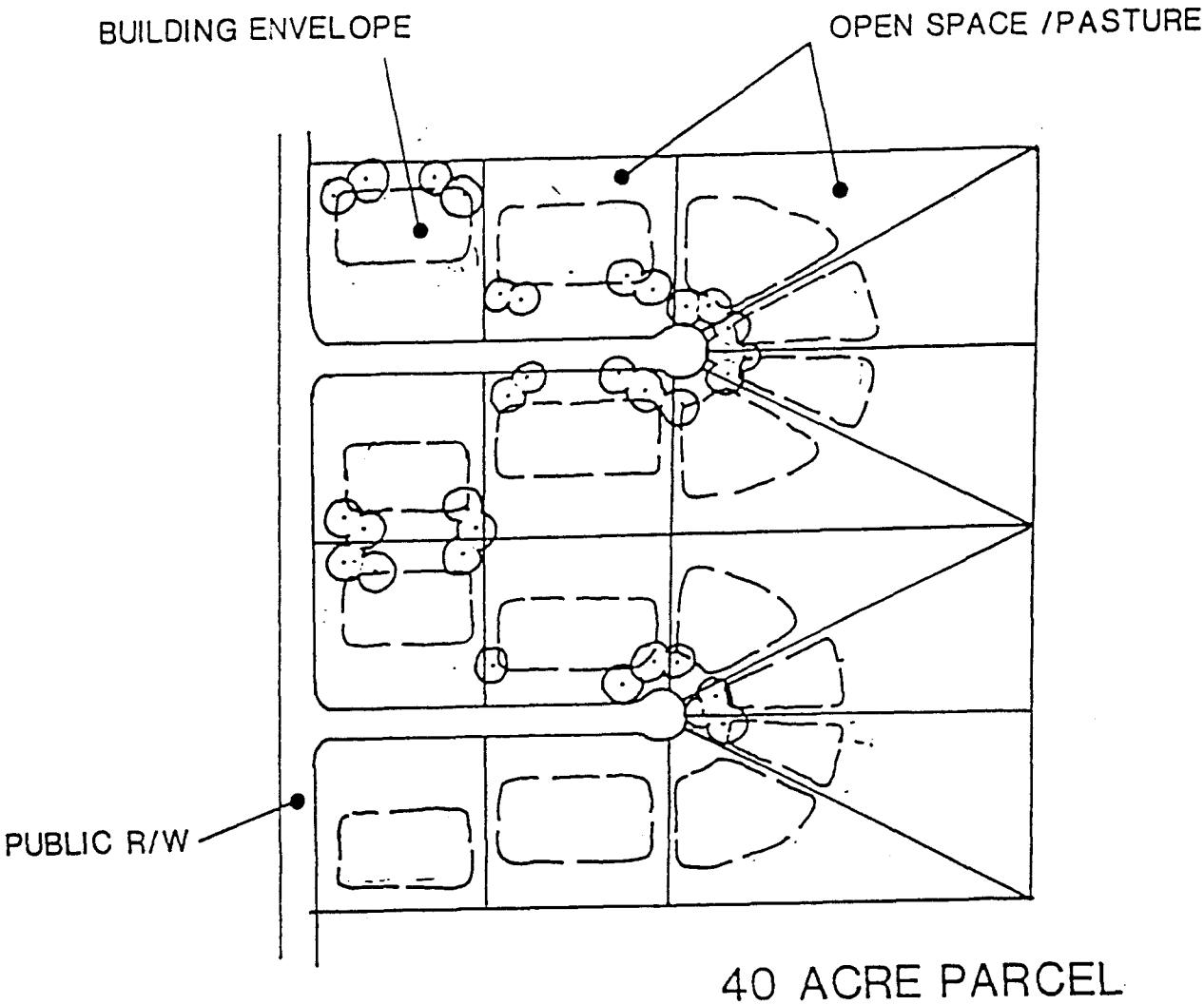


SKETCH

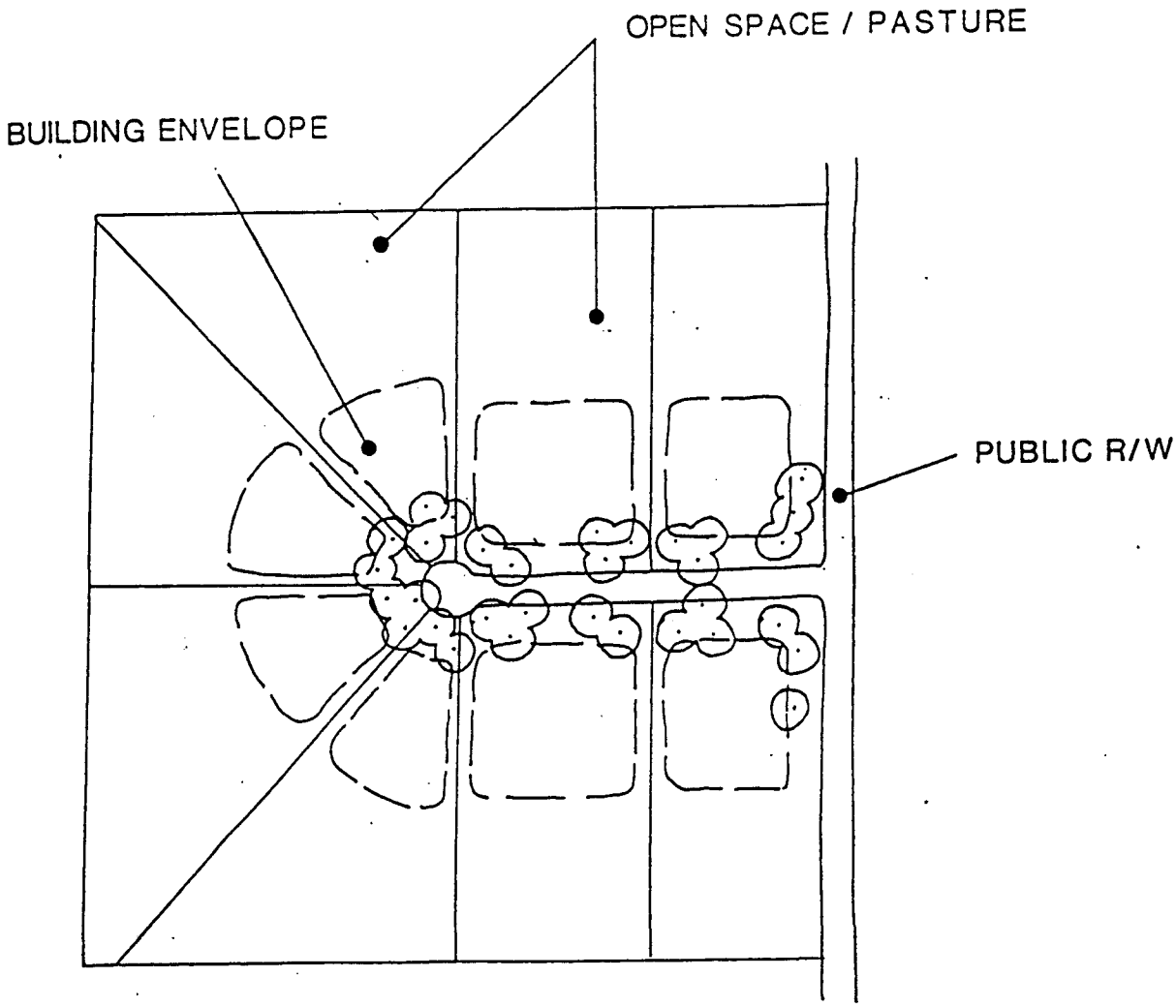
1 – 1 1/2 Acre Lot Concept



2 1/2 Ac.± Lot Concept

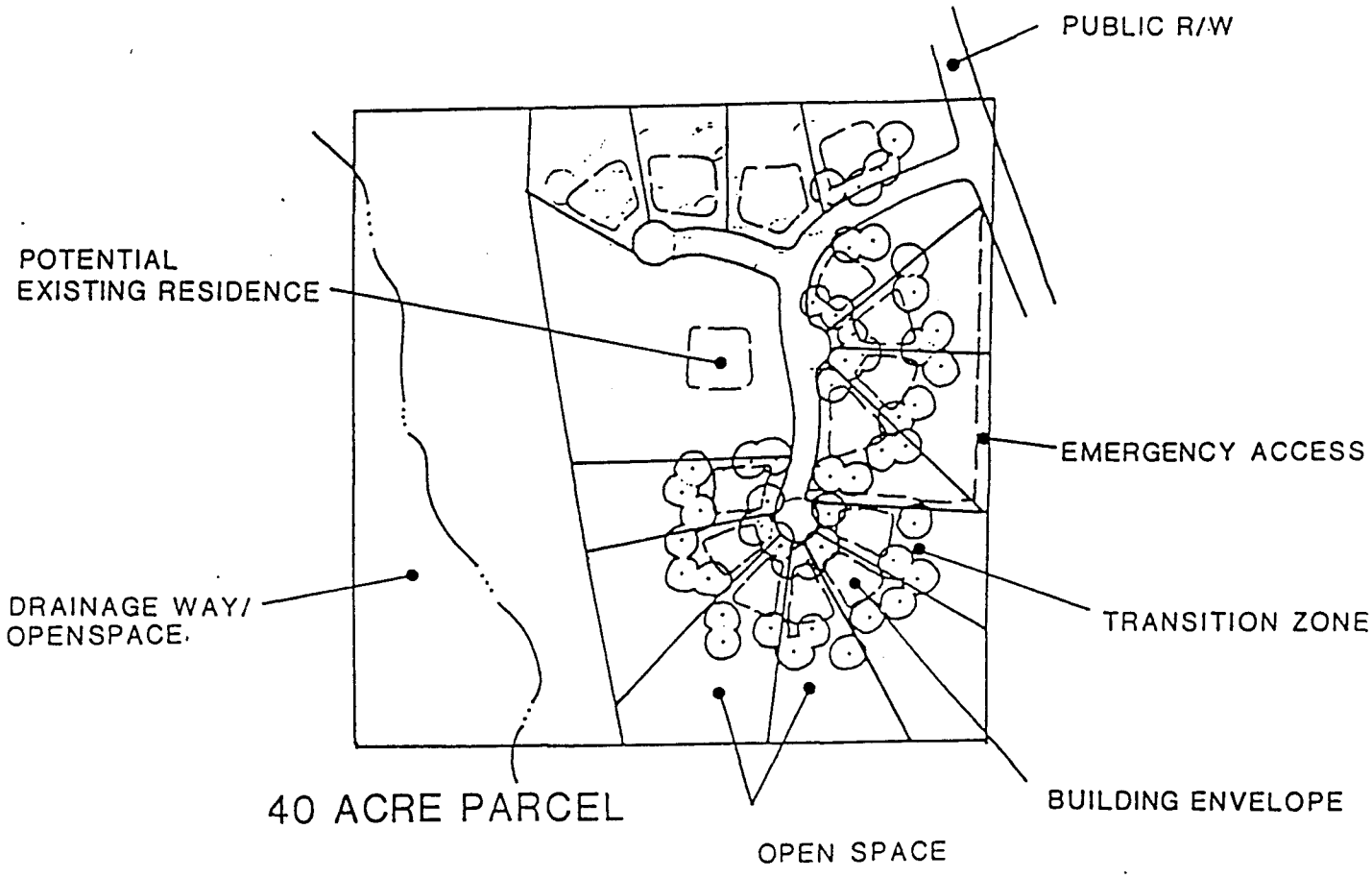


2 1/2 Ac. Lot Concept

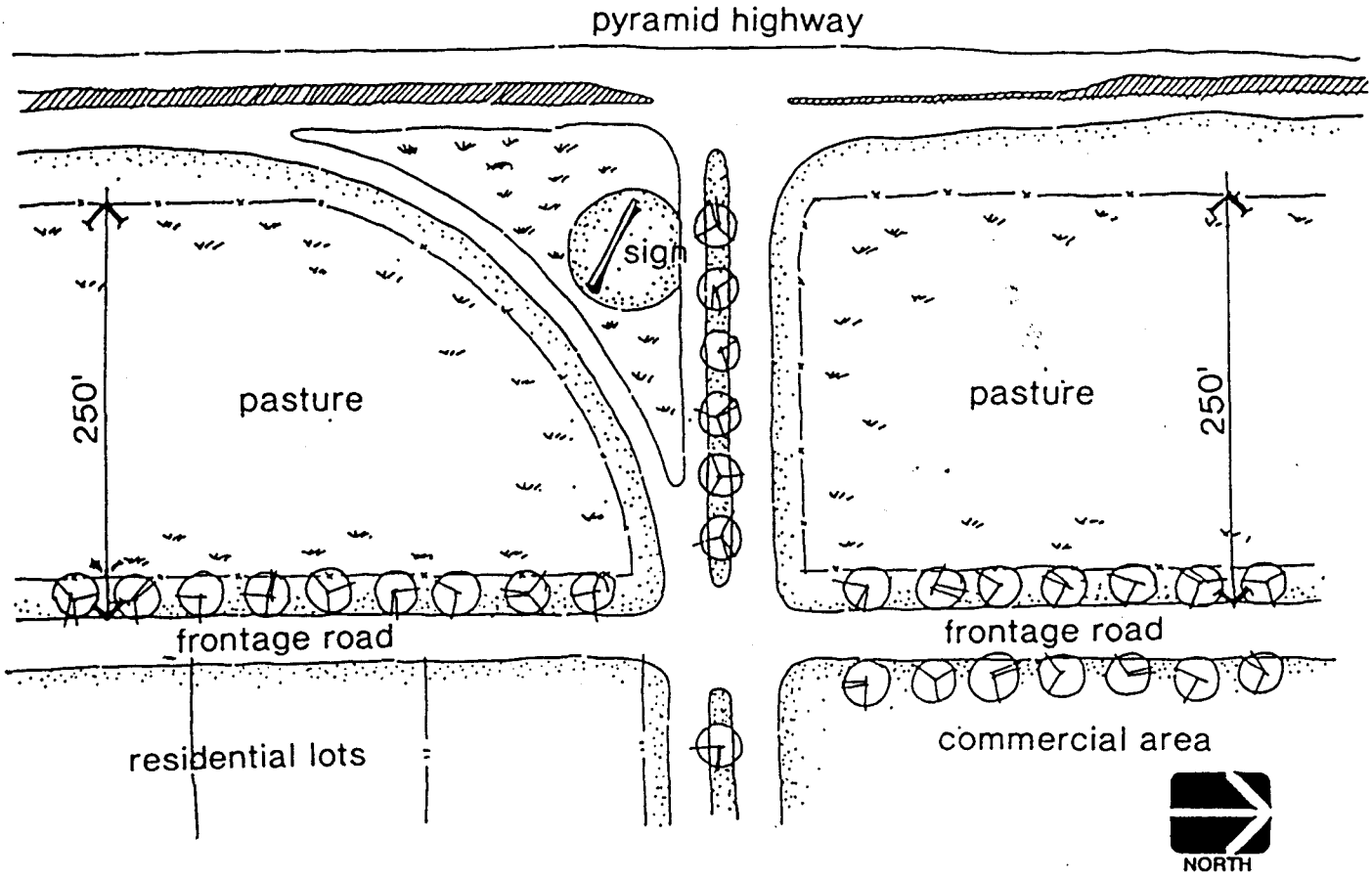


40 ACRE PARCEL

5 Acre Lot Concept



2 1/2 Ac. Density Cluster Development



HIGHWAY EDGE TREATMENT

PLATE 13

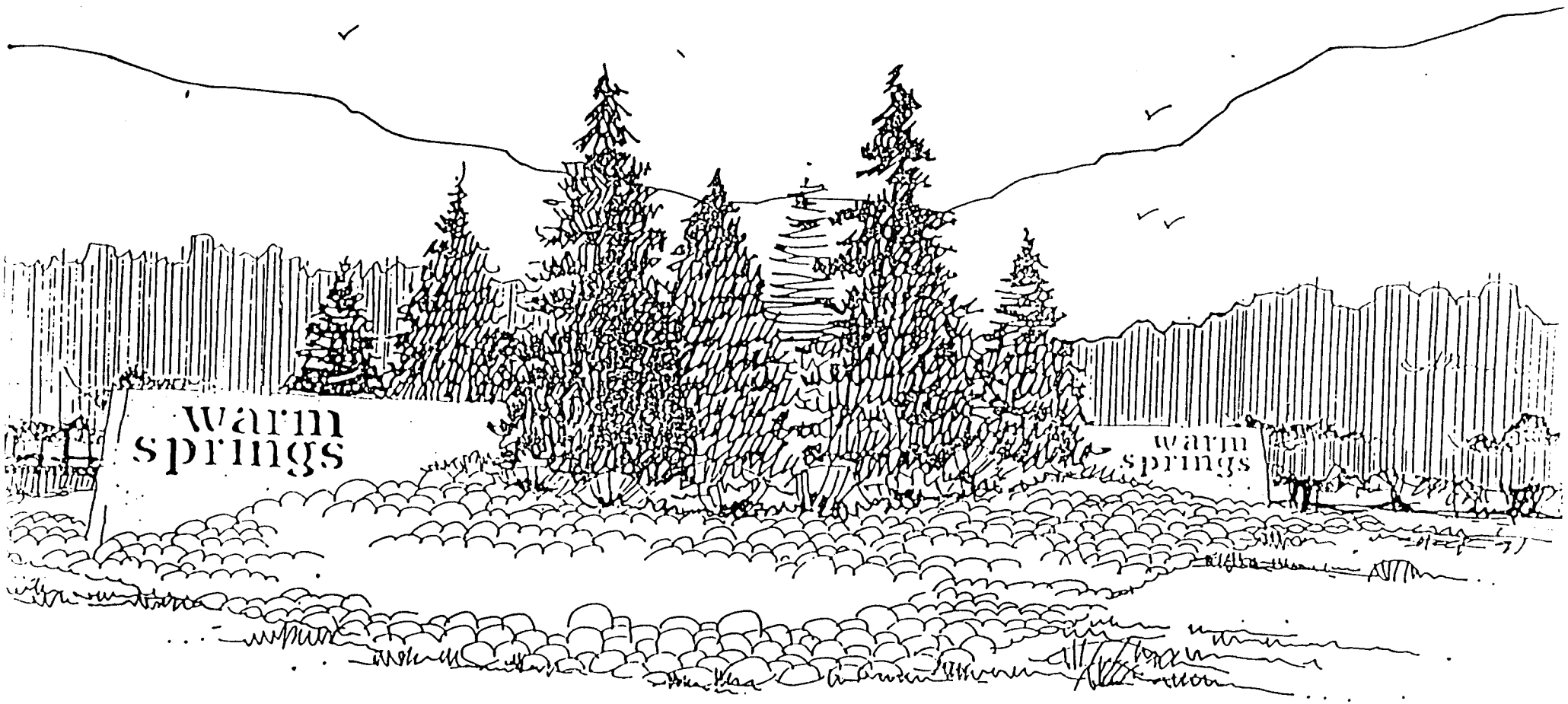
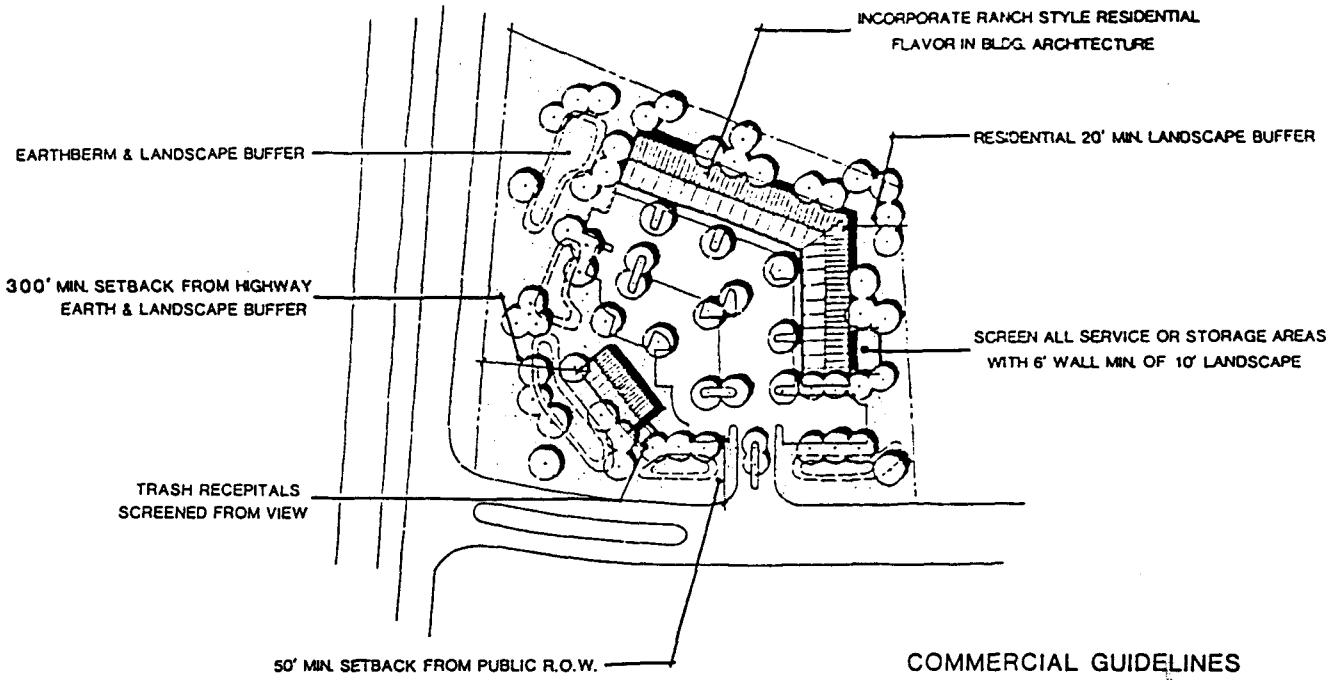
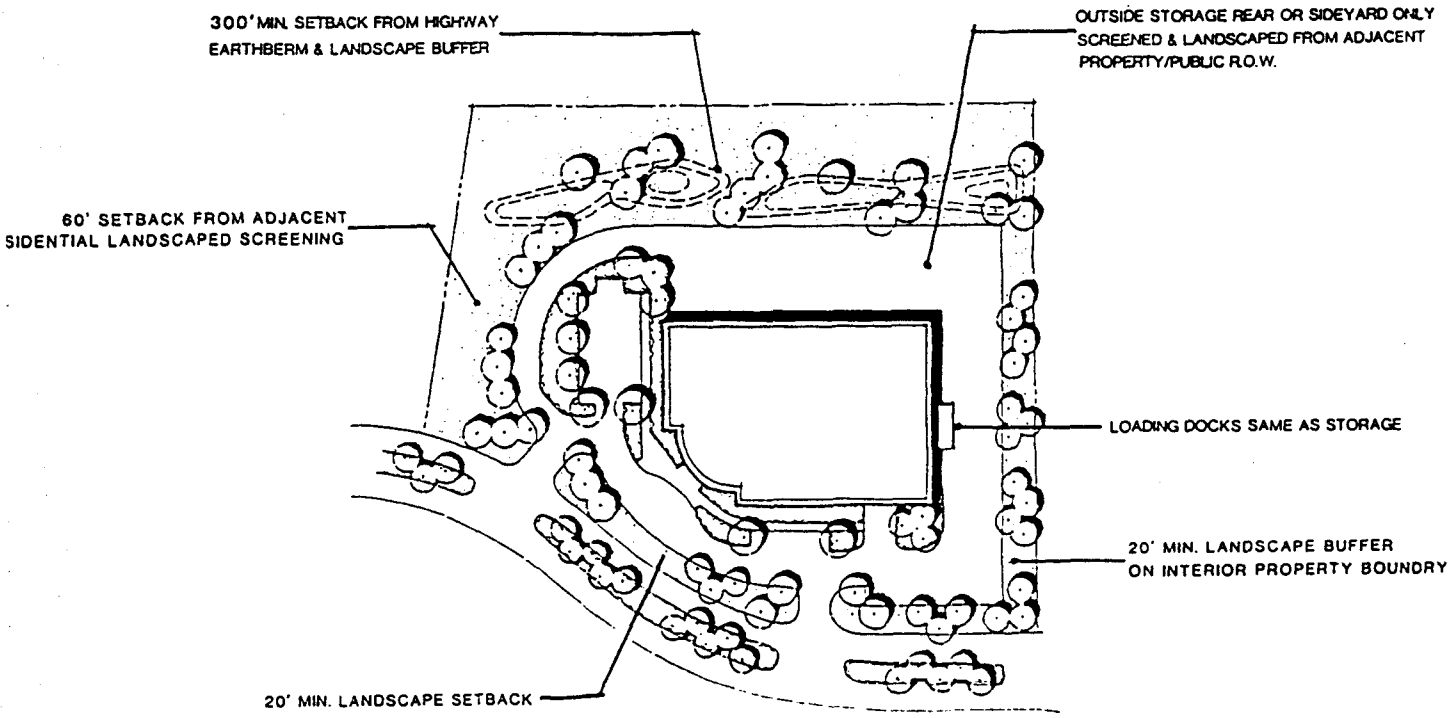


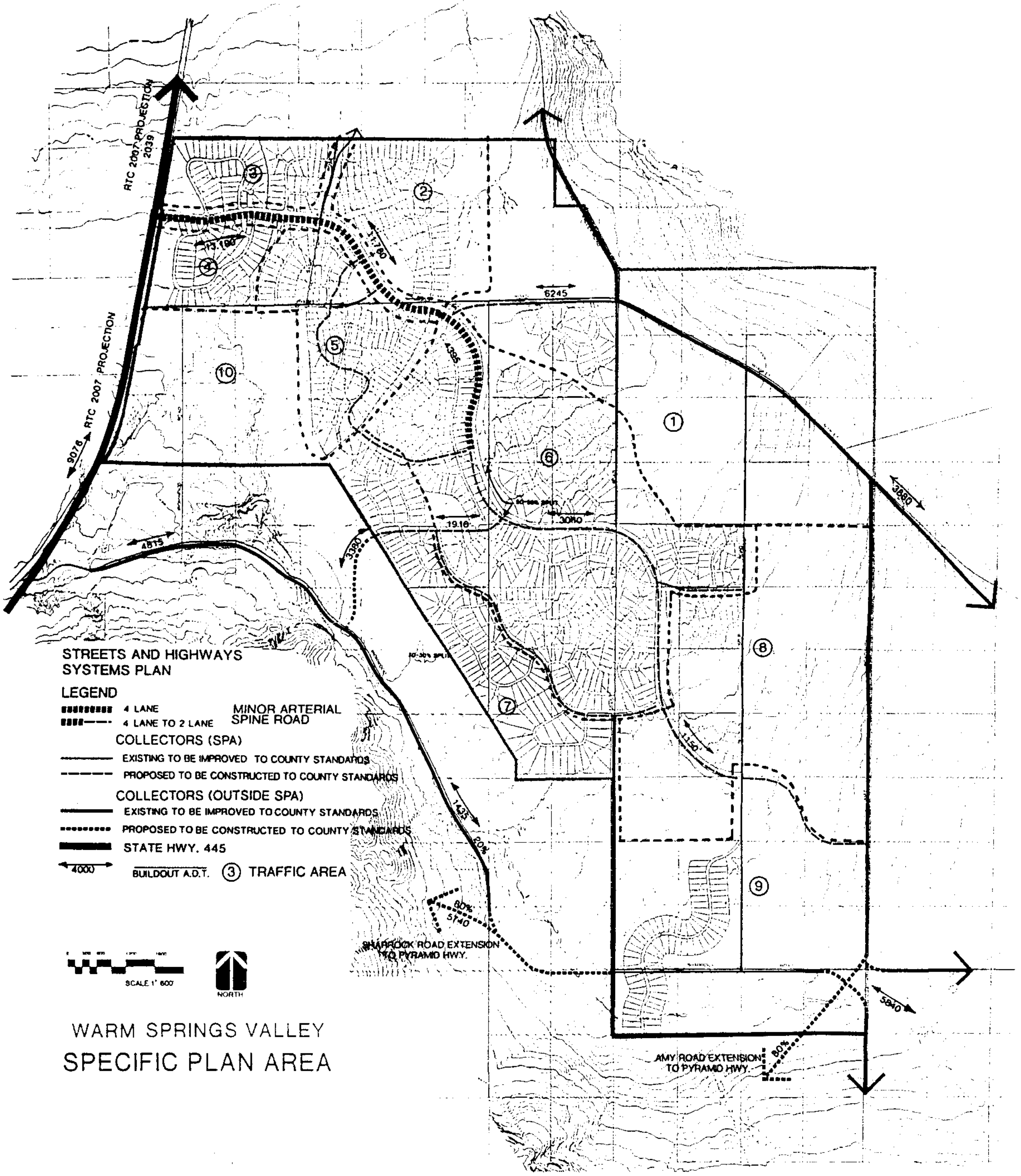
PLATE 14

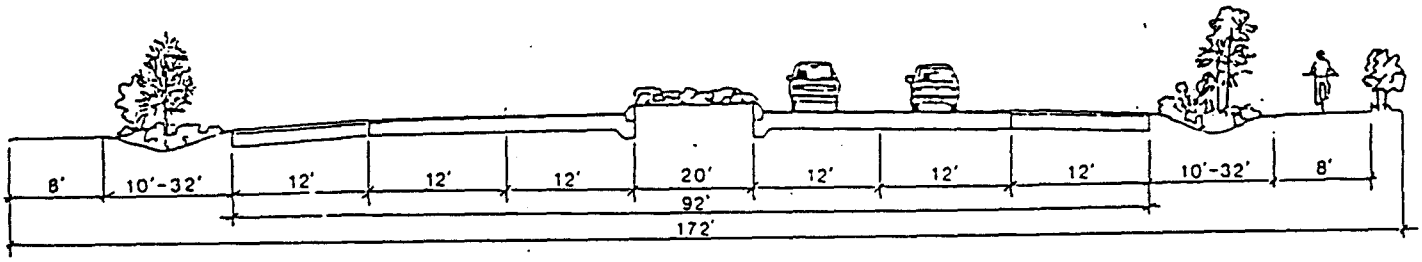


COMMERCIAL GUIDELINES



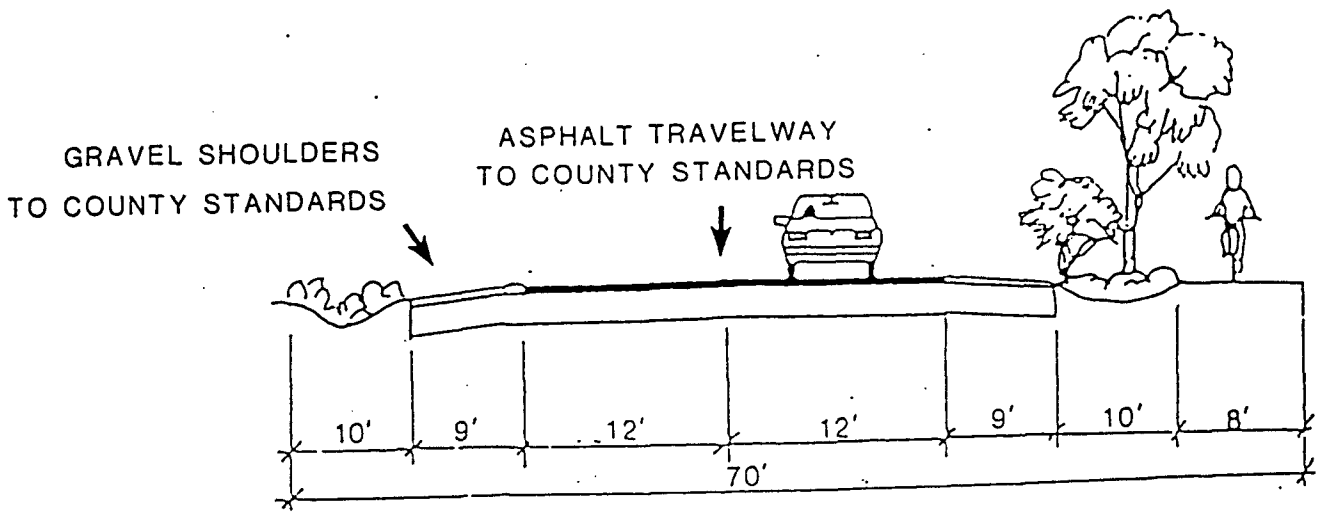
OFFICE AND PRODUCTION GUIDELINES


RTC 2007 PROJECTION
2039
9076
RTC 2007 PROJECTION
13,190
11,780
6245
4395
3880
1916
3040
3380
4815
1150
1435
80%
5140
SHAMROCK ROAD EXTENSION TO PYRAMID HWY.
AMY ROAD EXTENSION TO PYRAMID HWY.
5840
STREETS AND HIGHWAYS SYSTEMS PLAN
LEGEND
4 LANE
4 LANE TO 2 LANE
MINOR ARTERIAL SPINE ROAD
COLLECTORS (SPA)
EXISTING TO BE IMPROVED TO COUNTY STANDARDS
PROPOSED TO BE CONSTRUCTED TO COUNTY STANDARDS
COLLECTORS (OUTSIDE SPA)
EXISTING TO BE IMPROVED TO COUNTY STANDARDS
PROPOSED TO BE CONSTRUCTED TO COUNTY STANDARDS
STATE HWY. 445
4000 BUILDOUT A.D.T.
③ TRAFFIC AREA
SCALE 1" 600'
NORTH
WARM SPRINGS VALLEY
SPECIFIC PLAN AREA



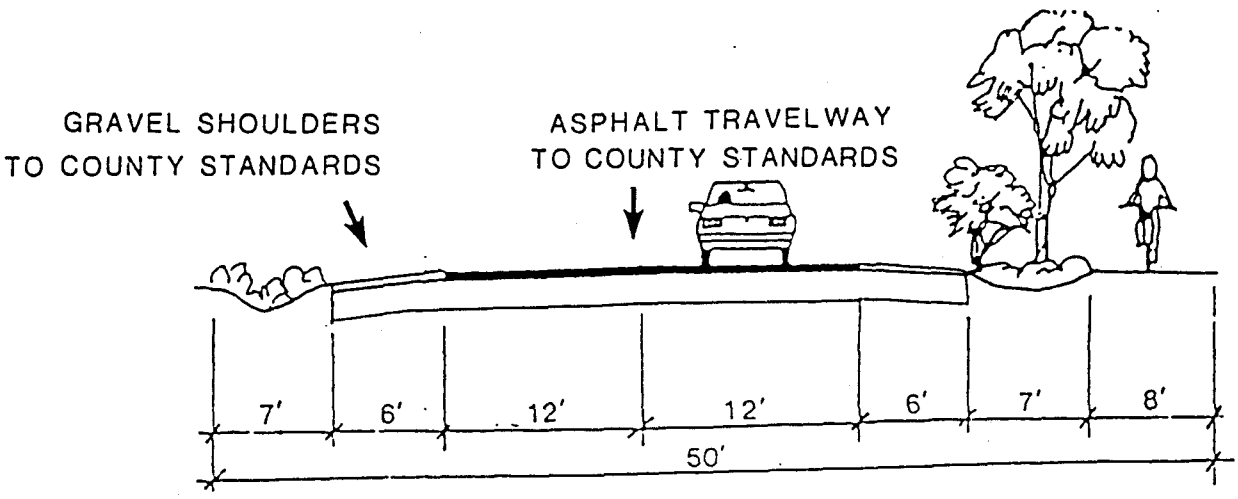
CENTRAL SPINE ROAD

MINOR ARTERIAL



2 LANE COLLECTER

AREAS ZONED GREATER THAN 1 ACRE



2 LANE LOCAL
AREAS ZONED GREATER THAN 1 ACRE

WATER SERVICE

COMMUNITY WATER SUPPLY SYSTEM

The proposed community water supply system will serve approximately 1,503 residential units along with limited commercial, business, and community facilities. The 1,503 is based on only those parcels served by the community system. Five-acre parcels and greater will be served by individual wells.

Existing Wells

An initial field inspection of the wells which currently exist in the proposed development area was conducted on June 7, 1991. Seven irrigation wells are present which are currently being used during the growing season for alfalfa, potato and turf grass production. Three additional monitoring wells are also present. Locations of these wells are shown on Plate 23. Monitoring well OW-3 was obstructed at 100 feet.

Wells No. 1, 2, 3, and 5 are being used to irrigate alfalfa on the Pratt Ranch. Each well is currently equipped to produce approximately 900 to 1,200 gpm. Well No. 7 is also present on the Pratt property, but due to excessive sand production the pumping equipment was removed. The specific capacity of these wells is in excess of 10 gallons per minute per foot of drawdown (gpm/ft).

Driller's logs indicate that these irrigation wells range in depth from approximately 550 to 750 feet. Fifty foot sanitary seals appear to be present in all existing irrigation wells. Wells No. 1 through 5 were constructed in the late 1960's.

Western Turf operates two wells, Well No. 6 and WT-1. Well No. 6 reportedly taps shallower aquifers than previously mentioned wells, and thus produces lower quantities of water. Currently, Well No. 6 is equipped to pump at approximately 600 gpm. Well WT-1 was constructed in 1987 to a depth of 770 feet. Well WT-1 is equipped to pump 2,200 gpm and has a specific capacity in excess of 20 gpm/ft.

Well No. 5 is being used by Nevada Potato and reportedly produces similarly to the Pratt wells.

Ground Water Quality

A detailed study of ground water quality in Warm Springs Valley was conducted by Sharp, Krater & Associates, Incorporated in 1974. Guyton and Associates assimilated additional water quality information in their 1987 study. The Sharp, Krater & Associates investigation primarily addressed high nitrate concentrations present in the south central portion of Warm Springs Valley. The study indicated that nitrate concentrations in the development area generally range from 5 to 90 parts per million (ppm). As illustrated in Plate 24, groundwater with higher nitrate concentration is located along the western edge of the project area. The current federal and state drinking water standard for nitrate is 45 ppm. The concentrations of nitrate were found to fluctuate seasonally with the highest concentrations occurring during the end of the irrigation season. Several sources for the increased nitrate concentration were hypothesized and investigated in detail. This study concluded that the most probable explanation for the fluctuating high nitrate concentrations was due to induction of ground water from the clay aquitards which form the confining layers to the aquifers. As irrigation pumpage proceeds through the growing season, the poorer quality water in the clay units is slowly drawn into the aquifer, thus resulting in the observed increased nitrate concentrations. During the winter months when no pumping is conducted, induction of the poorer quality water ceases or is substantially reduced, and due to natural groundwater flow and recharge, post-pumping ground water quality is reestablished. A summary of available data is presented in Plate 25. Fluoride and arsenic concentrations are also present at levels above federal and state standards in a localized area in the northwestern corner of the study

area. Elevated concentrations in this region are shown on Plate 25. The maximum recorded fluoride concentration is 6.00 ppm and the maximum arsenic concentrations is 0.29 ppm. The state and federal standard for arsenic is 0.05 ppm, and the state standard for fluoride is 2.0 ppm. This localized area of elevated fluoride and arsenic is associated with a thermal ground water source (probably fault related) which was identified in the 1974 Sharp, Krater & Associates study.

No other groundwater quality problems have been noted in the development area, although no complete drinking water quality analysis was available. Limited irrigation water quality data indicate that general mineral constituents, excluding nitrate, are within federal and state drinking water limits.

It should also be noted that some solvent contamination, apparently the result of previous Rocketdyne operations, has been discovered several miles upgradient of the site. Information on file at the Washoe County District Health Department preliminarily indicates that this contamination does not impact the development area, although more extensive investigations are currently being conducted by the U.S. Department of Energy's environmental consultant.

Community Water Supply Wells

Based on our review of available data, the area of Well No. 7 appears to be the most favorable location for extraction of good quality groundwater. Unfortunately, Well No. 7 is not currently usable as a municipal well due to excessive sand production during pumping. This well could be lined with a smaller diameter casing to help alleviate some of the sanding problems. However, generally one-third of the production capability of lined wells is lost due to lower hydraulic well efficiency. A new production well, properly designed and constructed, would yield sand free water at this location, while also offering greater well efficiency and an expected longer life-span. (Refer to Plate 26.)

In order to reduce pumping stress on the aquifer in the Well No. 7 area and help avoid inducing lower quality water from the clay aquitards, we suggest that one or two additional wells be added to the system as development proceeds. New production wells could be constructed or existing irrigation wells could be converted to municipal wells. Available driller's logs indicate that the required 50 foot sanitary seal is present in the existing irrigation wells. Based on the available water quality data, Well No. 1 and WT-1 appear the be the most favorable for this type of conversion.

Prior to constructing or modifying wells for the proposed project, water samples should be collected for complete drinking water quality analyses. A groundwater sample could be collected from the discharge of those wells equipped with pumps. A temporary pump would need to be installed in Well No. 7 in order to purge the well prior to sample collection. We also recommend that a quarterly water quality sampling program be initiated to monitor current nitrate concentrations and fluctuations.

All wells in the development area which will not be included as part of the water supply system or groundwater monitoring network should be properly abandoned in stages as agricultural uses are converted to municipal uses in accordance with applicable state regulations.

Design Guidelines

The community water supply system will ultimately serve 1,503 residential parcels and limited commercial, business, and community facilities. It is proposed that the system be constructed in stages as development proceeds. Initially, the system will be designed to served 420 residential parcels.

Design of the system will follow the criteria specified in the Washoe County Utility Division "Design Standards and Review Guidelines for Water and Wastewater Systems" dated November 1991 (standards). The standards are currently in draft form but are expected to be adopted by the County in the near future.

The standards specify that the average demand for system design shall be based on a per capita use of 200 gallons per day (metered system) and an occupancy factor of 3.5 persons

per residence. The average demand of each residential parcel is thus 700 gpd.

The minimum fire flow specified in the standards is 1000 gallons per minute (gpm) at a residual pressure of 20 pounds per square inch (psi). The standards require that calculations assume the fire flow occurs simultaneously with the average day demand. Fire flows used in this document to determine pipe sizes are as follows:

Residential	1500 gpm for 2 hours
Commercial/ Community	2500 gpm for 2 hours

The ratio of maximum day demand to average day demand (peaking factor) is specified in the standards to be 3.0. The minimum operating pressure during maximum day demand is required to be 35 psi. The standards do not give factors to determine peak hour demand and minimum hour demand on maximum day.

The source of supply for the community water system would be Well locations 1, 7, and WT-1 as discussed above. A new well located in the southeast portion of the SPA shall also be investigated at the time staged development is proposed for that area. Initially, two sources would be provided. These would most likely be Well 7 and Well 1. Source capacity would be developed so that at any time the amount available with all wells producing would equal or exceed the maximum day demand. The source capacity available would also be able to supply the average day demand with the largest well out of service. Well pumps would be selected to produce the maximum day demand with all pumps running and pumping into the system.

The potential exists that other existing, modified, or proposed well locations may be capable of supplying adequate volumes that would meet County and State water quality standards. Additional engineering analyses should be conducted to study these other well locations and potentially incorporate them into the overall community system on a phased basis.

Storage would be provided during all phases of development. The two components of storage would be as follows:

1. Fire Storage
    a. 1500 gpm for 2 hours (initial development)
    b. 2500 gpm for 2 hours (ultimate development)
2. Emergency storage as specified in the standards of 850 gallons for each residential unit.

Storage would be provided in increments as required by the number of units being built. Immediate construction of the ultimate storage capacity is not proposed because of potential water quality problems associated with large water volumes and small water use. Initial design would take into account the need to construct additional tanks as development occurs. Storage tanks would be located to take advantage of the natural terrain to reduce their visibility. Screening berms would be constructed as necessary to ensure that the tanks could not be seen from any area.

Based on preliminary calculations, the preferred location for storage is above the valley floor at approximately elevation 4545 (maximum water surface elevation). This would allow fire flow to be delivered to the southeast corner of the plan area at a residual pressure of about 30 psi.

The maximum static pressure permitted by the standards is 100 psi. Two pressure zones would be necessary to meet this criterion with a tank water surface elevation of 4545. The higher zone would have a static pressure range of about 55 psi to 100 psi; the lower zone range would be about 60 psi to 75 psi. A minimum of three pressure reducing stations would ultimately be required to connect the zones. The three supply wells are located in the lower zone so booster pumps would be required to transfer water to the higher zone. If a new well location in the southeast can be developed to meet

quantity and quality standards, the need for booster pumps may be eliminated.

Plate 26 shows the trunk lines of the ultimate water system. Local distribution lines are not shown but would be required as part of any development. The pipe sizes shown were determined based on the ultimate development design criteria listed above and assume that storage is located at elevation 4545. The sizes are preliminary and subject to revision during detailed design. All minimum pressure and maximum velocity requirements specified in the standards can be met with these pipe sizes.

Phasing and Implementation

Because development may occur at several locations within the plan area, it is not possible to describe the exact facilities that would be constructed as part of the initial water system. Plate 26 illustrates initial development areas that would be served by the initial system. Water service would be extended to areas of initial development by constructing the necessary segments of the ultimate system. Trunk mains constructed during phased development would be sized to carry the ultimate demands.

The storage location shown on Plate 26 is not within the plan area. This could delay acquisition of the site and the necessary pipeline easements. If the storage site cannot be obtained at the time of initial development the assistance of Washoe County would be required to obtain the site through use of eminent domain powers.

Alternatively, initial storage could be located in the valley near Well 7. This would require booster pumping stations and hydropneumatic tanks to provide the necessary flows and pressures. Multiple pumps would be required to meet the various ranges of flows from minimum hour demand to peak hour demand. Fire flows would be provided by pumping and not from storage. Standby power would be necessary to provide system reliability. A gravity fed system would be preferred over this alternative.

It will be the responsibility of every owner or developer of land in the water service area to install/construct all water lines, hydrants, and appurtenances to serve each parcel/dwelling unit created. The construction cost of all Specific Plan Area facilities noted on Plate 26 will be shared equally by all owners/developers in the water service area, on a per parcel/dwelling unit basis. Any development/parcelization adjacent to proposed Specific Plan Area trunk line facilities shall construct the specified size trunk line facility at the time other adjacent facilities are constructed. Such construction is entitled to a credit against per parcel/unit fees. (Refer to Financing Plan.)

SANITARY SEWER

All development will be served by individual septic tank and leach field systems.

POLICE PROTECTION

The County Sheriff's Department feels it is logical to include this area with the Spanish Springs area since they are accessed by the same routes. They are presently in the process of patrol beat realignment that will place Spanish Springs and Warm Springs into a single beat by themselves. The Sheriff's Department estimates that by the year 2007, total service calls would probably necessitate at least one additional deputy in the combined beat area on a 24 hour-a-day basis. A 24-hour position requires:

- 5 additional deputies with uniforms and equipment
- 2 additional equipped vehicles
- 2 additional portable radios.

Additional deputies or a substation for better service to the area may be required based upon the actual demand for police services that occur in the beat area. The substation would be located in either Spanish Springs or Warm Springs.

FIRE PROTECTION

The installation of necessary fire protection water systems and presuppression automatic detection and suppression equipment will be required per PSF.4.6 in the County Comprehensive Plan.

PARKS, RECREATION AND OPEN SPACE

COMMUNITY PARKS

A 30-acre community park site will be dedicated per County standards to serve the SPA population. An additional 28 acres of potential park lands will be set aside in open space for County parks acquisition. Washoe County Parks Department will be responsible for how the parks are designed, when, and who will do the park design.

OPEN SPACE TRAIL SYSTEM

The Open Space will preserve the rural open character which now exists within the valley, a quality which has drawn residents to the area (refer to Plate 28).

These areas will be preserved in native vegetation providing corridors for wildlife, multiple use trail systems for recreational use and access to major open space areas on a regional scale. The use of motorized vehicles, except by authorized maintenance personnel, within the open space or on trail systems will be prohibited. (Refer to Open Space Plate 28.) (Refer to Drainageway Design Guidelines Plates 1 and 2 in Conservation Section of the Development Standards Handbook Framework.)

TRAIL COMPONENTS

Two types of trail systems are designated on the Open Space Components Plan. The pedestrian and bicycle trail system will exist throughout the SPA, linking all activity areas to residential neighborhoods. Motorized vehicles will be prohibited. The trails will be signed and the usage enforced by the County Sheriff.

Equestrian trails will also be provided, but limited to defined areas. They will be developed to link to BLM land surrounding the valley, the equestrian center and pasture along Pyramid Highway with access provided along roadway easements only.

GOLF COURSES

A golf course site has been designated on the plan. The site has been identified within the open space/regional flood control channelization area which would be incorporated into the course design. The site may be developed as either private or public courses.

Development of a course in Warm Springs Valley will be dependent on a market for additional courses to serve the region. (Refer to the Water Resources Section.)

DESIGN GUIDELINES

Revegetation of Open Space/Drainageways

All open space areas shall be left in native material. All disturbed areas within the open space and natural area of the transition zones will be revegetated with the native grass and wildflower seed mixture incorporated in this plan.

Areas currently in agricultural use that are designated as Open Space or in a transition zone will be left undisturbed. As agricultural practices are abandoned as development occurs, these areas will be reseeded with the native grass, shrub and wildflower mixture as above. A gradual transition of plant material will occur.

Drainage channels will be will be contoured to exhibit characteristics similar to natural channels, blending into the overall landscape and seeded or sodded with similar grasses. Temporary fencing of these seeded areas to prohibit disturbance by wildlife may be installed until vegetative cover is established.

The soils and precipitation in Warm Springs Valley greatly reduce plant species available for revegetation. The species selected will survive with little or no supplemental irrigation water being applied after establishment.

The mixture for most areas is listed in Table 4.

The Indian Ricegrass must be drill seeded at 3-4 inches below the surface. The Kochia, Winterfat, and Globe Mallow should be drill seeded deeper than 1/8 inch below the surface. This will require two operations, but is necessary.

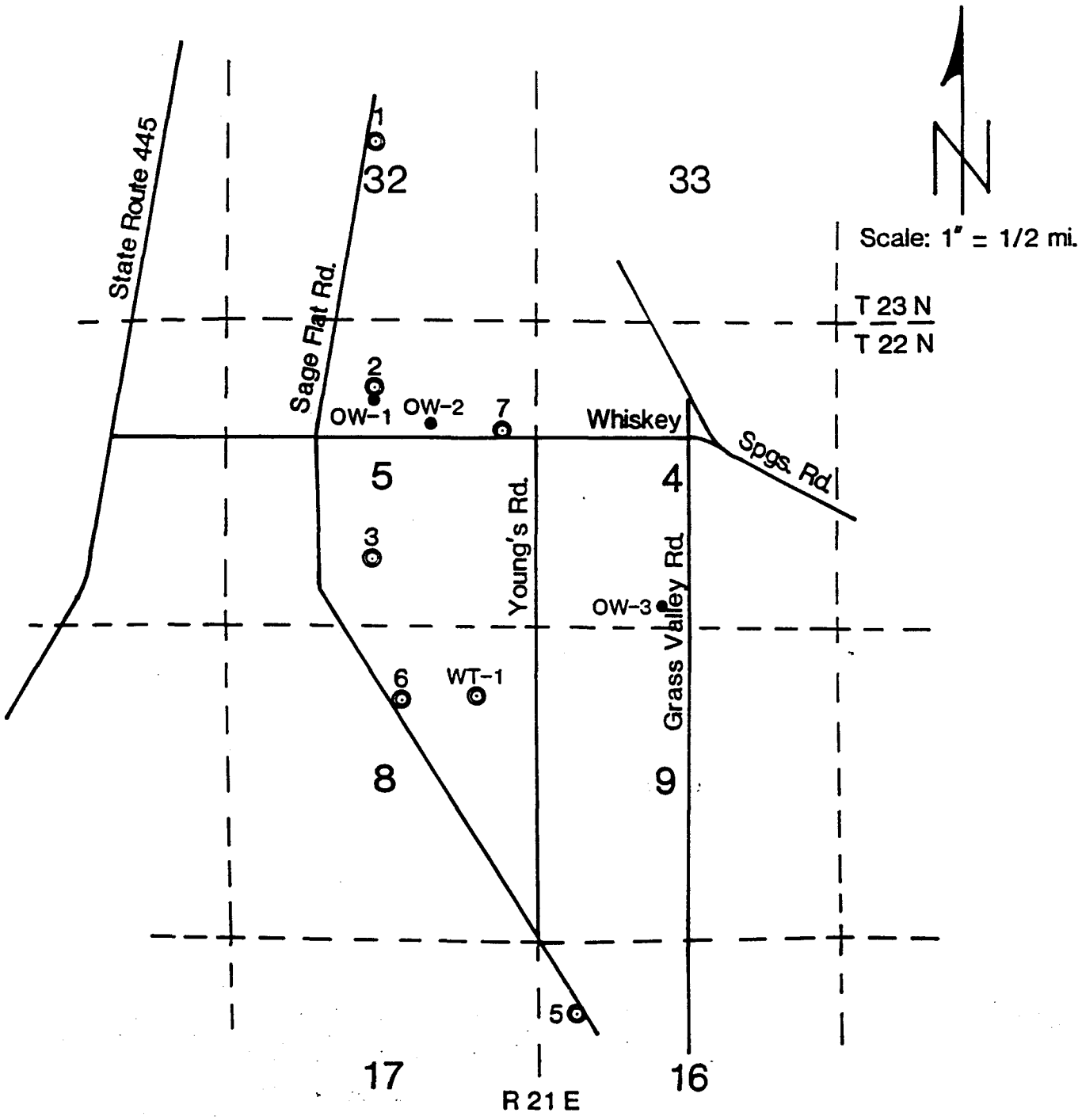
Basin wildrye (elymus cinereus) should be substituted for ricegrass in clay soil areas. Wildrye is not adapted to shallow soils and placement should be monitored. The seed should be drill seeded no deeper than 1/2 inch below the surface. Wildrye will require more supplemental irrigation water than ricegrass during the first year, but once established will survive with no additional water.

Seeding should be completed during late fall or early winter. This will assure seed is placed and ready to germinate when soil moisture and temperature conditions are ideal the following spring.

To improve establishment chances seeded area could be hydromulched at a rate of 2,000 lbs./acre. Supplemental irrigation water can be applied the first growing season. Irrigations should be light and infrequent. This will promote root development which will be essential once irrigation water is eliminated.

TABLE 4

COMMON NAME	BOTANICAL NAME	AMOUNT
Scarlet Globe Mallow	Sphaeralcea coccinea	1/2 lbs./acre
Indian Ricegrass	Oryzopsis hymenoides	4 lbs./acre
Immigrant Forage Kochia	Kochia prostrata	1 lb./acre
Winterfat	Eurotia lanata	3 lbs./acre



LEGEND:

- ⊙ Existing Production Well
- ● Existing Monitoring Well

TD=Total well depth
SWL=Static water level (June, 1991)
Q=Production rate (June, 1991)

DATAPRINT N56506

sea CONSULTING ENGINEERS

RENO/SPARKS, NEVADA
LAS VEGAS, NEVADA
PHOENIX, ARIZONA

Existing Water Wells
WARM SPRINGS VALLEY
DEVELOPMENT AREA

Project No. 2166-01-1

PLATE 23

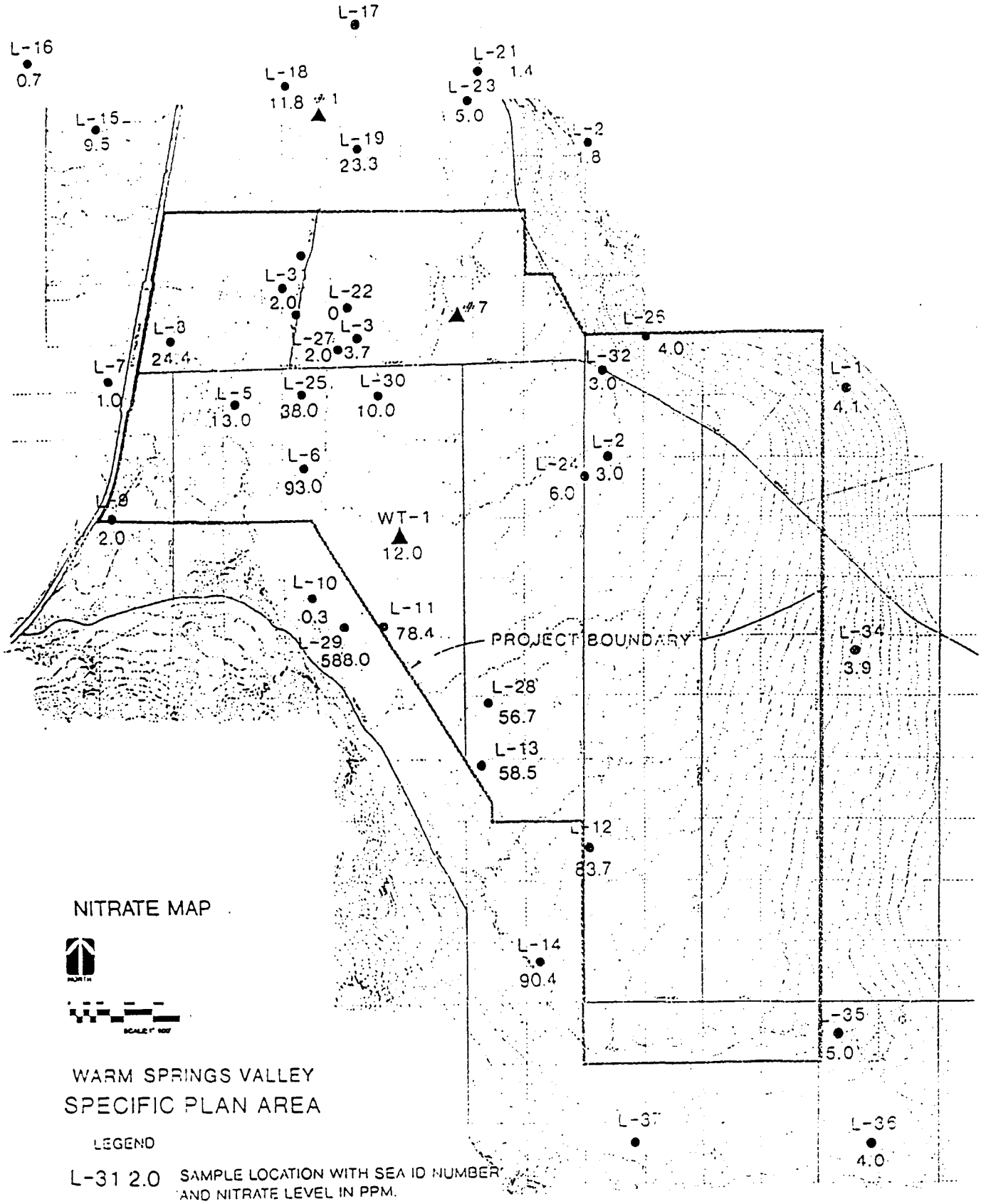

L-17
L-16
0.7
L-18
11.8
#1
L-21
1.4
L-23
5.0
L-15
9.5
L-19
23.3
L-2
1.8
L-31
2.0
L-22
0
#7
L-26
4.0
L-8
24.4
L-27
2.0
L-3
3.7
L-7
1.0
L-5
13.0
L-25
38.0
L-30
10.0
L-32
3.0
L-1
4.1
L-6
93.0
L-2
3.0
L-24
6.0
L-9
2.0
WT-1
12.0
L-10
0.3
L-11
78.4
L-29
588.0
PROJECT BOUNDARY
L-34
3.9
L-28
56.7
L-13
58.5
L-12
83.7
L-14
90.4
L-35
5.0
L-37
L-36
4.0
NITRATE MAP
WARM SPRINGS VALLEY
SPECIFIC PLAN AREA
LEGEND
L-31 2.0 SAMPLE LOCATION WITH SEA ID NUMBER AND NITRATE LEVEL IN PPM.
#1 PROPOSED PRODUCTION WELL

PLATE 24

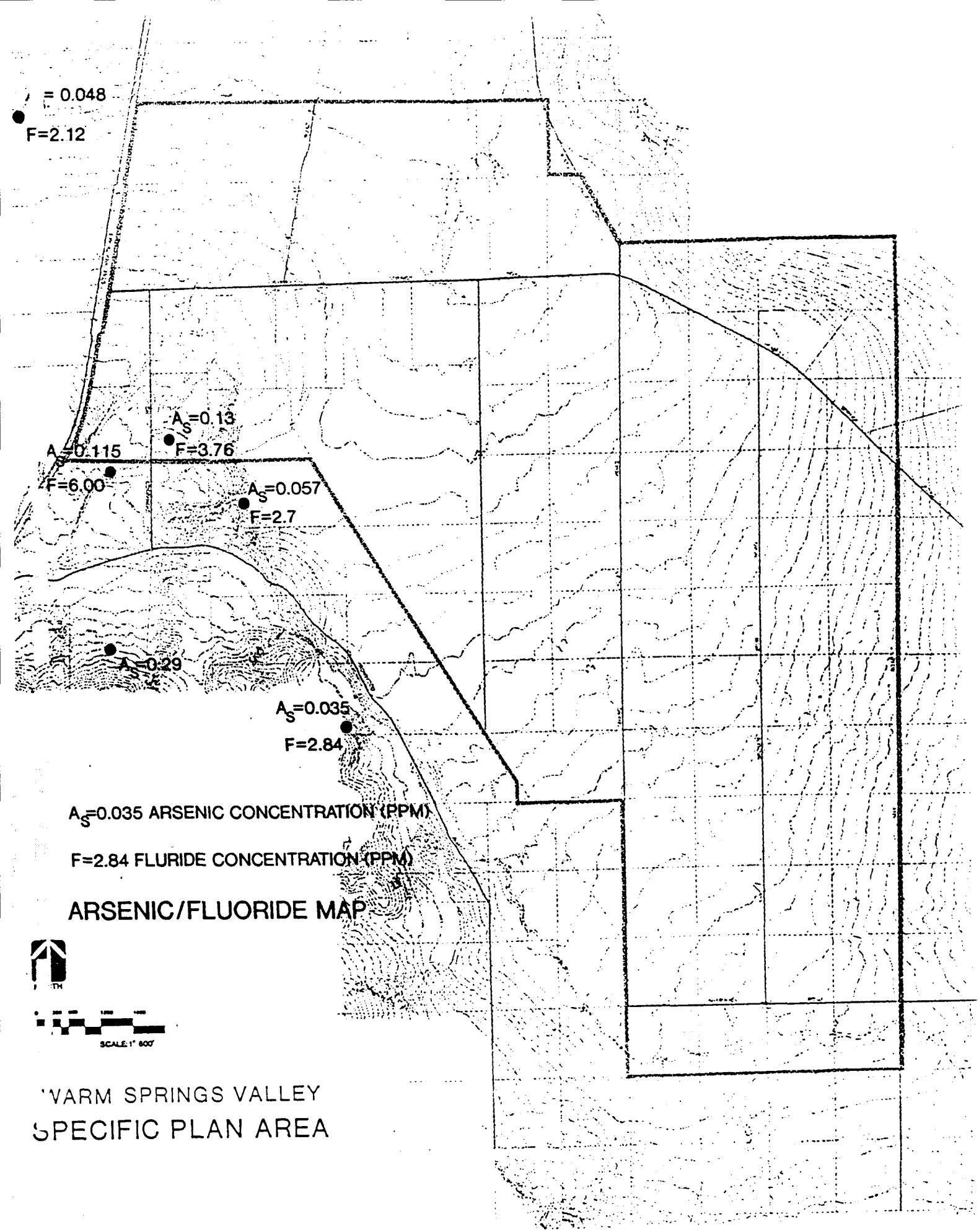

= 0.048
F=2.12
A_S=0.13
F=3.76
A_S=0.115
F=6.00
A_S=0.057
F=2.7
A_S=0.29
A_S=0.035
F=2.84
A_S=0.035 ARSENIC CONCENTRATION (PPM)
F=2.84 FLURIDE CONCENTRATION (PPM)
ARSENIC/FLUORIDE MAP
SCALE: 1" 600'
VARM SPRINGS VALLEY
SPECIFIC PLAN AREA

PLATE 25

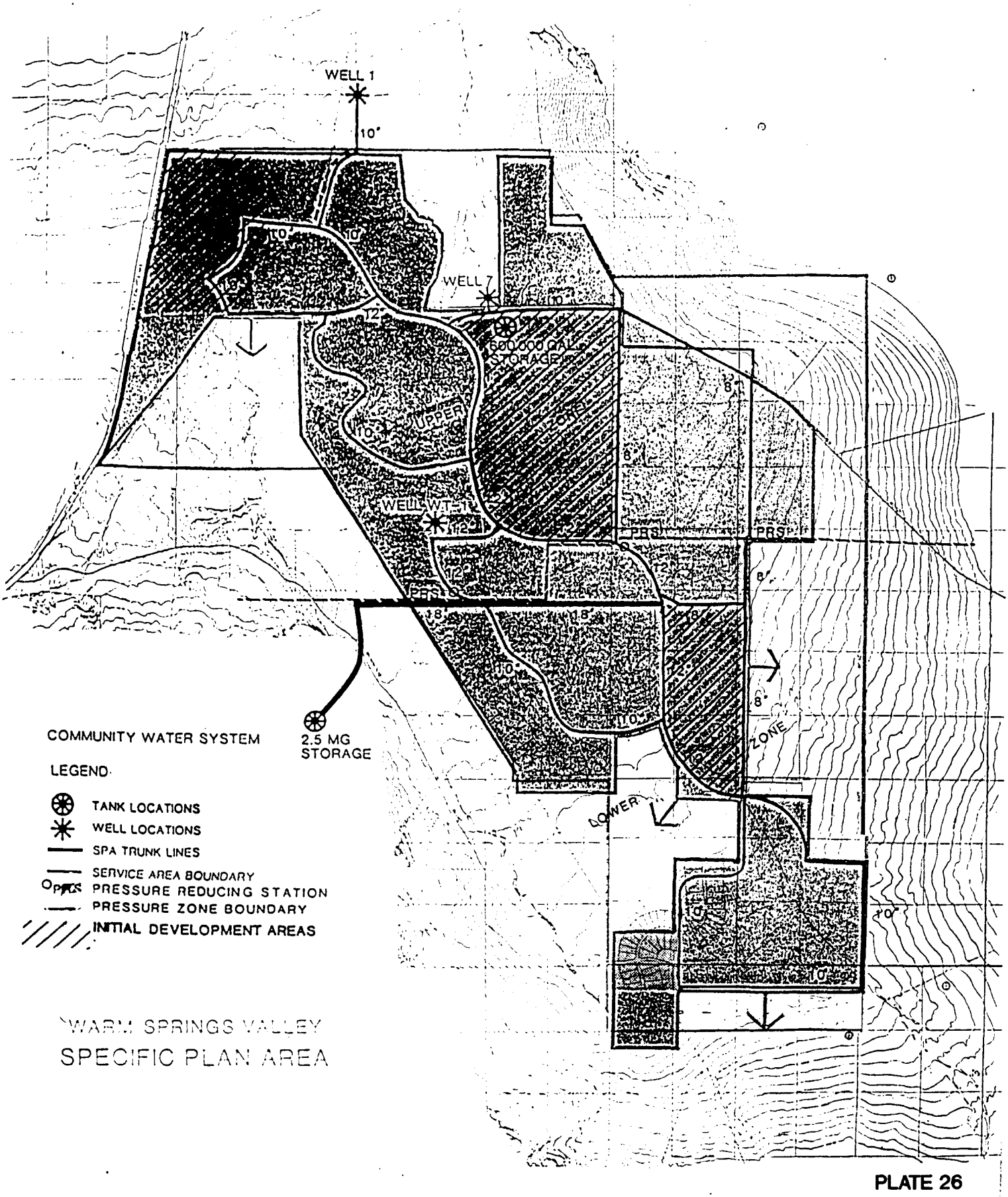
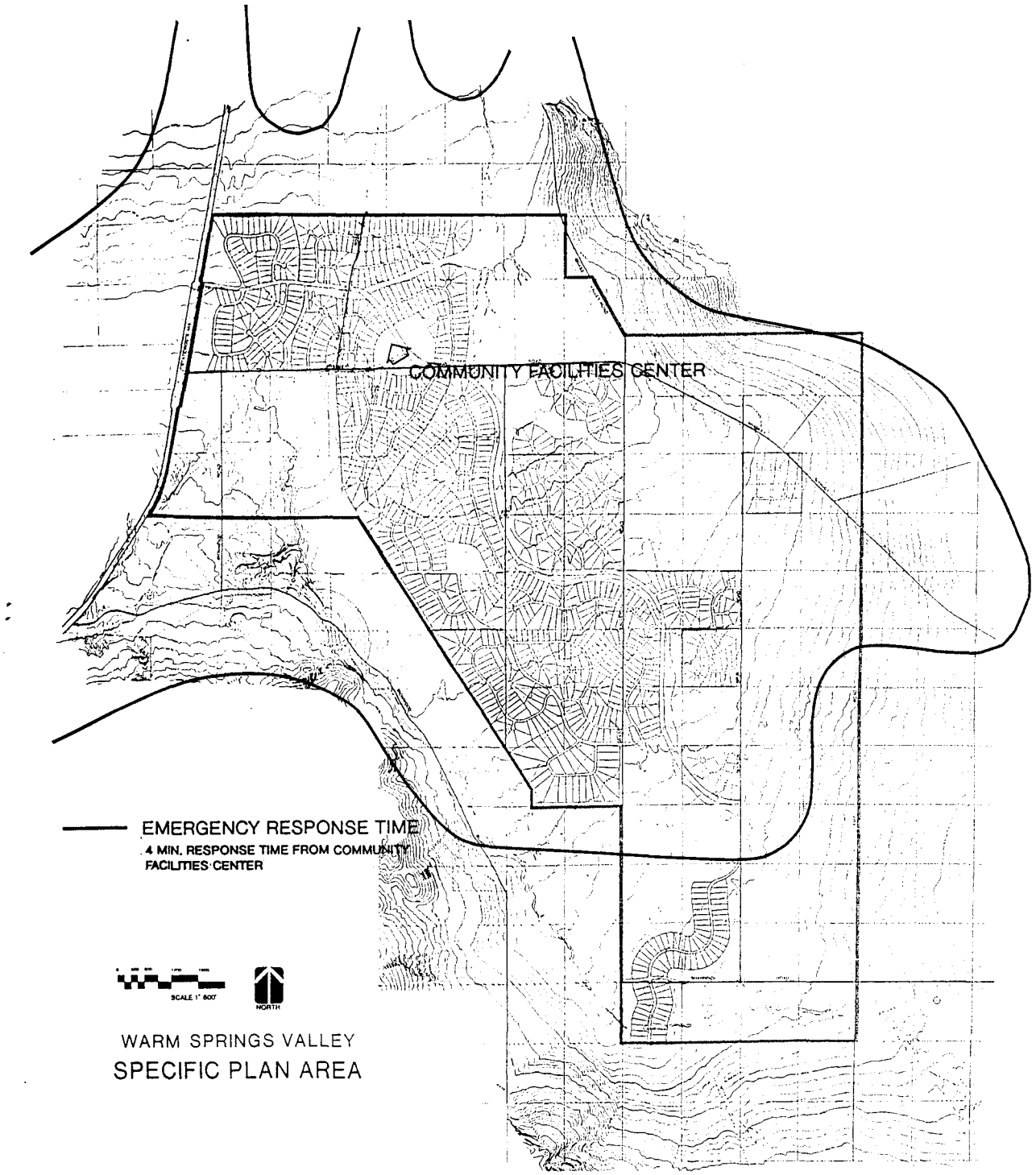
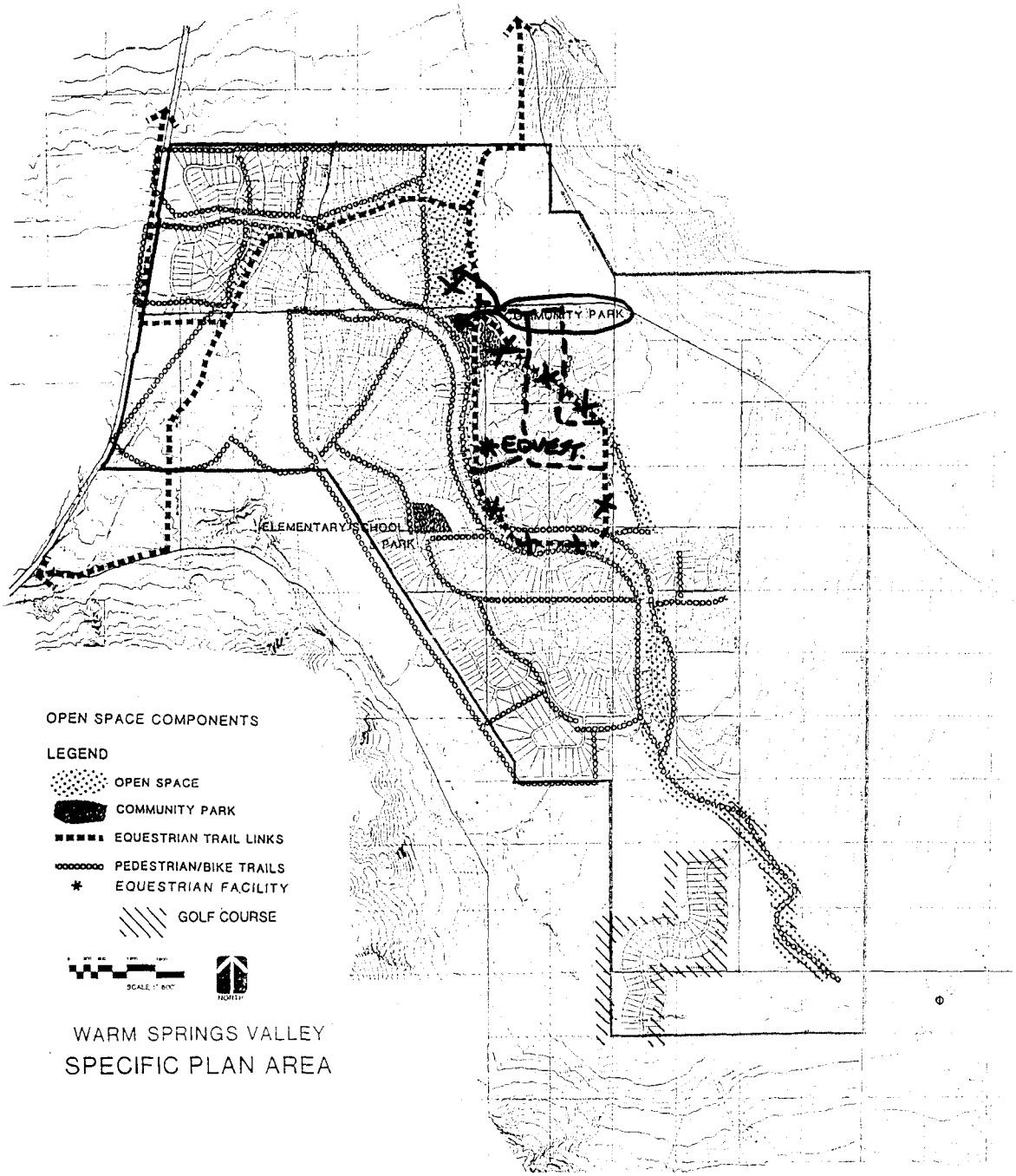

WELL 1
10"
WELL 7
600,000 GAL. STORAGE
UPPER ZONE
WELL WT-1
PRS
2.5 MG STORAGE
LOWER ZONE
COMMUNITY WATER SYSTEM
LEGEND
TANK LOCATIONS
WELL LOCATIONS
SPA TRUNK LINES
SERVICE AREA BOUNDARY
PRESSURE REDUCING STATION
PRESSURE ZONE BOUNDARY
INITIAL DEVELOPMENT AREAS
WARM SPRINGS VALLEY
SPECIFIC PLAN AREA

PLATE 26



WARM SPRINGS VALLEY
SPECIFIC PLAN AREA



WARM SPRINGS VALLEY
SPECIFIC PLAN AREA

PLATE 28.

IMPROVEMENT COST SHARING - FINANCING PLAN

A key element in the ultimate implementation of the plan is the resolution of the financing for the construction of the infrastructure to serve the SPA. Infrastructure needs include roads, sanitary sewer, parks, public facilities, water systems, storm drainage, and electric and gas lines.

The following is a summary of the cost sharing plan for the financing of improvements in the SPA. The plan assumes collection of fees by Washoe County for the various infrastructure needs to be financed on an SPA area basis. The fees will be collected at the time a building permit is issued or a final subdivision/parcel map is filed. The plan also allows for owners/developers to finance and construct necessary infrastructure up front and receive credits against required contributions and reimbursements, if warranted.

The basis of the financing plan will be the preparation of costs estimates for all Specific Plan Area facilities to be paid for on a per unit/parcel basis, with a yearly escalation provision based on the Consumer Price Index (C.P.I.). Prior to implementation of a specific facility in the plan, developers of the SPA must coordinate efforts with the County to establish rate structures, a detailed financing plan and mechanism for fee collection by the County.

ROADS

1. All owners/developers to dedicate ROW for ultimate street widths in the SPA as identified by the Transportation section of the plan.

2. All owners/developers to contribute to construction of 2 lane or 4 lane central spine road in SPA only as identified by the traffic study. Contributions to be on a per unit/parcel basis for residential and per square foot basis for commercial and business park (refer to Plate 19, Streets and Highway Systems Plan, in the Lane Use and Transportation section of the Plan).

3. Any owner/developer who constructs any portion of the central spine road shall receive credits against the required contributions, if warranted. Owners/developers shall be reimbursed from general contribution fees received if developer expenditures exceed the required contribution amount. Reimbursements shall be prioritized to provide all paybacks to owners/developers in order of when the up front expenditures were made.

4. Local and collector two lane facilities to be financed by owners/developers with adjacent development/parcelization as it occurs and as facilities are warranted by traffic generation.

5. Owners/Developers to contribute their proportionate share of improvements outside of the SPA upon establishment of an area wide or County impact fee program.

6. Should the County or G.I.D. determine that some form of assessment district can be created to offset front end costs, the same formula basis as above should apply.

7. The plan recommends that the County authorize the G.I.D. to act as it's agent in administering this improvement.

PARKS AND OPEN SPACE

1. All owners/developers to pay Residential Construction Tax fees. Fees to be used for park construction in the SPA.

2. Owners/developers who dedicate/construct parks shall receive credits as allowed under NRS.

3. In the event that the County is authorized and obtains funding to purchase open space, the owners/developers shall set aside land as illustrated on plan for such acquisition.

4. All owner/developers are responsible for constructing improvements within each development phase.

5. Should the County determine that some form of assessment district can be created to offset front end costs, the same formula basis as above should apply.

6. Based on staff recommendation, County Parks and Recreation would maintain the parks and open space.

PUBLIC FACILITIES (including Fire Station, Sheriff Substation, Community Center, etc.)

1. All owners/developers to contribute to construction of identified public facilities in the planning area on a per unit and square footage basis.

2. Owners/developers who construct facilities shall receive credits against the required contributions and reimbursements, if warranted.

3. The plan recommends that the County administer all community facilities.

WATER

1. All owners/developers in the community water service area to construct all water lines to serve their adjacent developments.

2. All owners/developers to contribute to construction of storage and trunk lines within the community water service area of benefit as identified by the Public Service section of the plan.

3. Any owner/developer who constructs or contributes to the construction of necessary infrastructure beyond their proportionate share shall receive credits against the required contributions and reimbursements, if warranted.

4. Should the County determine that some form of assessment district can be created to offset front end costs, the same formula basis as above should apply.

5. The plan recommends that the County administer this improvement.

STORM DRAINAGE

1. All owners/developers to be responsible for on-site detention/retention.

2. All owners/developers to contribute to the construction of regional flood control facilities that directly benefit their properties on a proportionate share basis. Contribution to be on a per unit basis for residential and per square foot basis for commercial and business park.

3. Any owner/developer who constructs or contributes to the construction of necessary infrastructure beyond their proportionate share shall receive credits against the required contributions and reimbursements, if warranted.

4. Should the County determine that some form of assessment district can be created to offset front end costs, the same formula basis as above should apply.

ELECTRIC AND GAS

1. Owners/developers to cooperate with Sierra Pacific Power Company with regard to construction of facilities and reimbursements per power company policies.

SCHOOLS

1. The single 12-acre school site to serve an elementary school population of 426 students within the SPA shall be set aside under the provisions of NRS 278.346 for the Washoe County School District.

DEVELOPMENT STANDARDS HANDBOOK FRAMEWORK ADMINISTRATION AND ENFORCEMENT PROCEDURES

The basis for administration and enforcement will be Washoe County and its departments, boards, and executives. It is assumed from on-going discussion that the General Improvement District, acting as an arm of the County, may be given responsibility for administering or managing some of the capital improvements that will be constructed privately and dedicated to the County.

SPECIFIC PLAN AREA - PLAN

The plan will be adopted by the Washoe County Board of Commissioners after review and recommendation by the Planning Commission and Staff. Once adopted, it will be the document used to review and determine conformance for all proposals for all forms of development and use in the Specific Plan Area. In addition to this plan, a Development Standards Handbook Framework will also be adopted, and every project submitted will be required to submit a project specific Development Standards Handbook that conforms to the Development Standards Handbook Framework.

ANNUAL REVIEW

The yearly review process will be part of the County's annual report review process, with a recommendation for revisions presented to the Planning Commission prior to the anniversary date of original adoption by the Washoe County Board of Commissioners. All proposed changes will be subject to public hearing.

The review process will start with a review and recommendation by the Citizens Advisory Board. After staff input and recommendations, any recommended changes will be presented to the Planning Commission for their review and recommendation. The Washoe County Board of Commissioners will then act on any changes they find appropriate. All proposed changes will be subject to public hearing.

FIVE YEAR UPDATE

Every five years a major review should be conducted to bring all elements into conformance with changes that may have occurred, and insure consistence from one section to another. It may be necessary to start this review process a year earlier to accommodate any extensive changes in the document, such as the water budget.

PLAN AMENDMENTS

Any proposed development that is administratively determined to be not in conformance with the plan shall require a plan amendment. The plan amendment process would involve the same public hearing process required for adoption of the original plan. A plan amendment can be requested at any time during the first two years of the plan, and quarterly thereafter, based on Washoe County requirements. For regional plan conformance review, this type of amendment will be considered as being similar to a zone change, special use permit, or tentative map, and will only require Regional Plan Conformance Review if it meets the thresholds for a project of regional significance as defined by State law.

No plan amendments that exceed the equivalent dwelling units, as defined in Table 3 and Table 5 of the SPA water budget, shall be permitted until after the water study is completed and accepted.

ZONING

All base zoning shall remain in place with a Specific Plan Area overlay zoning being adopted simultaneously with adoption of this plan. All proposed uses shall be reviewed based on this plan.

PROPOSED SUBDIVISIONS, PARCEL MAPS, OR BOUNDARY LINE ADJUSTMENTS FOR RESIDENTIAL USES

All proposed divisions of land, in any form, will require review for conformance with the plan in addition to all other regulations that may apply. Assuming that all requirements of NRS can be met, the following procedure shall apply:

Subdivision - All tentative final maps and required Development Standards Handbook should be referred to the Citizens Advisory Board (C.A.B.) for their review and recommendation. The Planning Commission shall hold a public hearing and make their determination, which will then be referred to the Board of County Commissioners for their approval.

Parcel Maps, Boundary Line Adjustments, Division of Land Maps - The normal review process through the Parcel Map Review Committee shall be used.

PROPOSALS FOR NON-RESIDENTIAL USES

Any proposal that involves non-residential uses will also be reviewed for conformance with the plan. The following procedures shall apply:

COMMERCIAL AND PUBLIC FACILITY USES IN THE DESIGNATED VILLAGE CENTER OR HIGHWAY COMMERCIAL USES

Uses Specified in Plan - If the use can clearly be determined administratively by the County Planning staff to be a use permitted by the plan, then a site plan review process can be followed. The site plan would be referred to the C.A.B. for their review and recommendations, and then forwarded to the design review committee for their action.

Uses Not Specified in the Plan - If a proposed non-residential use cannot clearly be determined to be a conforming use, then the applicant must apply for a plan amendment. (Refer to plan amendment process.)

BUSINESS PARK USES

Any use proposed to be located in the Business Park shall be considered a major project, and will require an MPR special use permit. It will be referred to the C.A.B. for their review and recommendation, and then the Planning Commission shall hold a public hearing. After the planning commission has made its determination, it will be forwarded to the Washoe County Board of Commissioners for their action.

TECHNICAL DESIGN REVIEW

PURPOSE

The intent of requiring a technical review is to provide the community through the C.A.B., and the County with a technical review of all applications. The concept is to provide a mechanism for an applicant to have his plans reviewed by a technical group that would review for plan conformance and also provide alternatives, suggestions, and technical advice.

The goal is to insure, as much as is practical, that the intended quality and livability envisioned in the plan can become an actuality.

PROCESS

All applications for building permits, tentative and final maps, parcel maps, or site plan reviews in conjunction with non-residential developments or special use permit applications shall be submitted to a technical design review committee simultaneously with application to the County.

The technical design review committee shall review all applications for conformance with the S.P.A. Plan and Development Standards Handbook Framework.

They shall meet and make their findings within ten (10) days of receipt of an application and provide a written report to the applicant, and a recommendation to the Citizens Advisory Board and Washoe County within five (5) days of their findings. A fee will be established to pay professional members for their services.

AUTHORITY

The committee may only recommend approval of the plans as submitted, recommend modification or conditions, or recommend denial of the application. All decisions are only recommendations subject to review by Washoe County through the normal application process.

TECHNICAL QUALIFICATIONS OF COMMITTEE MEMBERS

The intent of the committee is to provide technical support to the Citizens Advisory Board and County staff. Based on this, the membership of the committee should be as follows:

One member each:

- Architect, Landscape Architect, Planner
- Developer/Major Property Owner
- Citizens Advisory Board or County Planning Representative as an ex-officio member

The committee members would be initially appointed by the major property owners, and confirmed by the C.A.B. and County Board. Vacancies would be filled through recommendation by major property owners to the C.A.B.

WATER BUDGET

The water budget will also require updating every year to reflect purchases/sales of water rights within the Specific Plan Area and between the Specific Plan Area and other areas of the basin.

A major update will be required at the end of five years or sooner if the results of the water study are completed earlier and accepted by the State Engineer. Amendments should occur at the same time annual reviews take place.

WATER USE

Each plan and Development Standards Handbook submitted must provide water use calculations that conform to the water budget in the plan and the design and use guidelines established in the Development Standards Handbook Framework.

The basis of the water allocation is establishment of a metered community water system. The County should establish a rate structure that:

1. Sets a minimum rate for on-going maintenance and management of the system. This rate would apply to consumptive use that matches the A.F.Y. allocation for residential based on lot size, and commercial as allocated in the plan.

2. Rewards for conservation of water with below minimum rates during the high use periods of the summer.

3. Penalize use above that allocated in the plan by charging escalated fees with escalated use.

ENTERPRISE/USER FUNDS

The plan recommends that the County be the recipient of and administer the water funds.

This enterprise fund is intended to provide the County with maintenance and administration funding for these capital facilities.

ASSESSMENT DISTRICT FUNDS

The plan recommends that the County be the recipient of and administer the following funds within the S.P.A. only:

Roads
Parks and Open Space
Community Center

These three assessment district funds are intended to provide the County with maintenance and administration funding for these capital facilities.

MINIMUM SUBMITTAL REQUIREMENTS

All development review submittals will require a plan in conformance with the adopted

Specific Plan, a Development Standards Handbook Framework amendment, and CC & R's following guidelines included in the Development Standards Handbook Framework Appendix. All submittals will follow the review process, as outlined in the following table.

MINIMUM PLAN REQUIREMENTS

A plan shall be submitted that conforms to the requirements of a tentative map as specified by Washoe County. This would include parcel maps. These requirements include, but are not limited to, topographic information at 2' contour intervals, preliminary grading, soils and geotechnical evaluations and reports, preliminary drainage analysis and design, preliminary community water system design, lot and public roadway layout and preliminary design including building envelope, transition zone, and open space designations on each lot, as specified in the Development Standards Handbook Framework.

An open space plan shall also be required that illustrates the type, location, and preliminary design of all trails within and adjacent to the proposed development.

MINIMUM DEVELOPMENT STANDARDS HANDBOOK REQUIREMENTS

A handbook shall be submitted that specifically documents how the particular project conforms to the Development Standards Handbook Framework. The handbook shall include, at a minimum, the following:

Specific designs, materials, colors, and construction techniques for all structures to be built within the project, including fences, signs, and out-buildings or accessory buildings. Elevations and sections will be required to illustrate the architectural style to conform with the Framework design guidelines.

Specific designs, and plant materials are to be used for all required and optional landscaping, as specified by the Framework design guidelines. Irrigation plans will be required along with calculations of water use, as specified in the Basis for Water Allocation and the Water Budget.

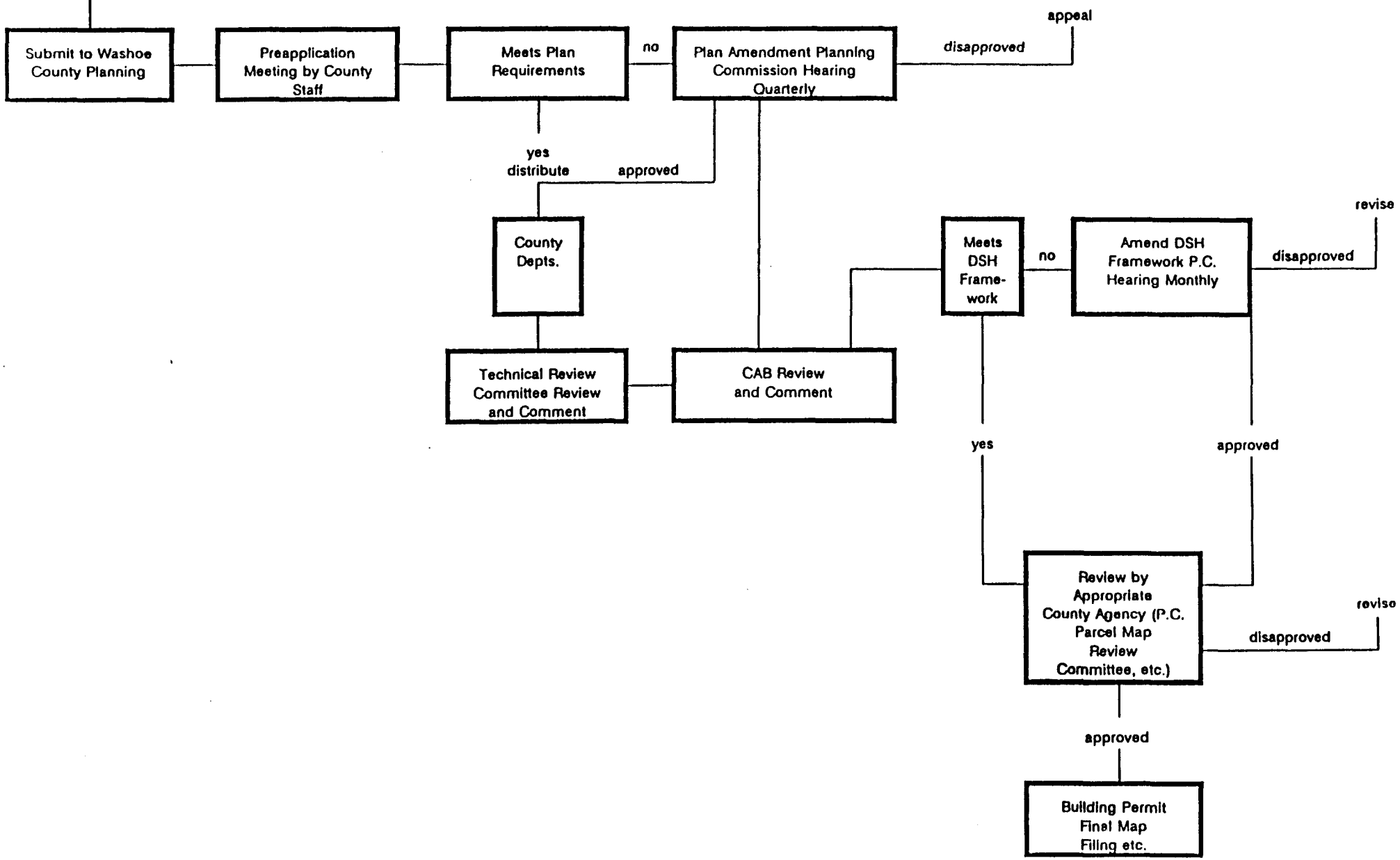
Typical site plans for each type of residential unit or commercial building showing driveways, parking areas, walkways, fencing, screening, etc.

MINIMUM COVENANTS, CONDITIONS, AND RESTRICTIONS (CC & R's) REQUIREMENTS

The example CC & R's, contained in the appendix of this plan, shall designate the minimum elements required for all project submittal draft CC & R's.

All Development Request Packages

- Plan
- DSH
- Draft CC&R's



APPENDIX A

WHEN RECORDED RETURN TO:

EXAMPLE

DECLARATION OF

COVENANTS, CONDITIONS AND RESTRICTIONS

OF

WARM SPRINGS VALLEY RANCH

This declaration made this _____ day of _____, 1992 by _____, a _____, hereafter referred to as "DECLARANT".

WHEREAS, DECLARANT is the owner of that certain real property located in the County of Washoe evidenced by the certain official subdivision map recorded in the office of the County Recorder of the County of Washoe, State of Nevada, on _____, in Book _____ of Subdivision Maps, at Page _____, and more particularly described as _____, and

WHEREAS, DECLARANT desires to impose upon said lots mutual and beneficial covenants, conditions and restrictions under a plan of improvement for the benefit of all owners and future owners thereof.

NOW THEREFORE, DECLARANT hereby declares that said lots, numbered _____ through _____ inclusive, are held and shall be held, conveyed, hypothecated, used, improved and occupied subject to the following covenants, conditions, restrictions, easements and

agreements which are imposed pursuant to a common plan and are intended to create equitable servitudes designed to preserve the quality of said land for the benefit of the various owners thereof, their heirs, successors in interest and assigns. To wit:

RESTRICTIVE PROVISIONS

1. Use and Improvements

No buildings, other than one detached single-family private dwelling, private garage for the use of the occupants of such dwelling and a barn or other usual and appropriate outbuildings strictly incident and appurtenant to a private dwelling, shall be erected or maintained on any lots, except that a guest house may be permitted subject to County requirements. No use whatsoever, except in connection with its use and improvement as a site and grounds of a private dwelling as above set forth shall be made of any lot or plot therein and furthermore, no driveway, road, right of way, or any easements for public or private use shall be granted for any reason whatsoever, across or through any lot to any other piece of property without complying fully with County requirements.

2. Temporary Dwellings, Outbuildings and Accessory Outbuildings

No trailers, except temporary contractors' trailers used in connection with construction and not provided for dwelling accommodations, tents, garage or other outbuildings shall be used as a temporary or permanent residence, nor shall any residential structure be moved on to the tract from some other location, nor shall "used" lumber be utilized in the construction of any building, whether it be of temporary or permanent

nature, unless approved prior to use by an architectural control committee. No accessory outbuildings shall be erected on any lot prior to the erection of a dwelling thereon. In no event shall any such accessory outbuilding, partially-completed or temporary structure ever be used for human occupancy or habitation.

3. Minimum Building Requirements

The construction of all dwellings on all lots, regardless of size of dwelling, must conform to F. H. A. or better specifications.

On all lots, no dwelling shall be erected or permitted to remain thereon having a ground floor area, exclusive of open porches and garages, of less than 1,500 square feet for a one-story building, or 750 square feet for a two-story building, with the total size no less than 1,500 square feet.

4. Building Setback Requirements

On lots 10,000 square feet or smaller, building setbacks will vary, providing a more rural atmosphere in the streetscape. No building or projection thereof shall be located nearer than 20 feet to any street or driveway access easement.

No building shall be located nearer than 25 feet to any rear lot line. All lots larger than 10,000 square feet will have an established building envelope with a minimum setback of 30 feet. Buildings may be located anywhere within the envelope; however, all buildings, structures or storage of any type, will be confined to this area on each lot. The size and shape of envelope may vary from lot to lot. The envelopes depth and setback will be related to overall lot size. These established setback lines notwithstanding, no structure shall be located nearer than 100 feet from any perennial stream. Areas within 100 feet of said perennial streams shall be maintained in their natural state. In accordance with fish and

game codes, the Department of Fish and Game must be notified at least 30 days prior to any activity that alters a stream. Stream crossings and culvert installations are subject to this code section.

5. Heating and Fireplaces

The use of efficient, non-polluting heating systems shall be encouraged within the SPA. Primary heating sources for residences shall be standard conventional electric or propane gas systems distributing heat through ducts within the home. Applicants who prefer stoves as the major heat source in the home will be encouraged to use pellet stoves. Approved pellet stoves will be accepted as a major heat source within the residence. Wood-burning stoves and fireplace inserts are prohibited as a major heat source. Applicants with standard conventional electric or propane heating systems designed for use as the major heat source within the residence will be allowed the installation of one wood stove as a secondary backup heat system, provided the wood stove meets the new County clean-burning, low-pollution standards. Open fireplaces are prohibited except for gas burning fireplaces which have false logs and are used purely for aesthetic purposes and are not considered a heat source within the residence.

6. Architecture

All buildings must incorporate a "western ranch" theme or identity architecturally, in a manner that is complementary and compatible with the plan area and its surroundings. No mobile homes are allowed except for construction purposes within the SPA. To enhance the development and maintain its rural character, buildings and structures shall adhere to the following guidelines:

a. Exterior Walls and Trim. Wood, brick, stucco, or stone material finishes are required for all exterior walls. Siding must run one consistent direction on all exterior walls. Exterior colors must be earth tone and harmonize with the surrounding landscape. No true primary or secondary colors are allowed, nor any gloss or semi-gloss finishes. All reflective metal such as chimney stacks, flashings, exhaust vents and pipes, must be painted to match or blend with surrounding materials. All draperies and window coverings should also be of materials and colors which harmonize with the surroundings. Aluminum windows, door frames, solar panels, and skylights must be bronzed or anodized. Steel windows and door frames must be painted to match or blend with surrounding materials.

b. Animals. On lots greater than one acre, horses or 4-H animals, limited to cattle or sheep, will be allowed provided they are not adjacent to the center spine road, village center, community facilities center, or school sites. No lot shall have more than two such animals. All other lots may have the usual household pets provided they are not kept for commercial purposes and are kept reasonably confined so as not to become a nuisance. Horses, animals, and household pets shall not unreasonably interfere with the comfort, privacy, or safety or other properties. No lot shall have more than four household pets.

If horses/4-H animals are to be allowed in an area, that area shall be designated on tentative and final maps for those uses, and water rights dedicated to provide irrigated pasture in areas where the animals must be kept when not stabled.

c. Roofs. Roofs must be constructed of fire-retardant materials. The use of standard wooden shakes or shingles will be prohibited. Roofing materials shall be restricted to tile, asphalt, fiberglass, fire-retardant treated shakes, or any new fire-retardant roofing materials in use which have pleasing aesthetic values. Roofing materials shall be of a color that harmonizes with the surrounding area and color scheme of the structure. Flat roofs will be discouraged.

d. Mailboxes. Architectural structures of natural materials and natural colors shall be provided for grouped neighborhood mailboxes. The grouped neighborhood boxes of 15 or less per site shall be placed at neighborhood entry points, with adequate access from main roadways.

e. Garbage and Refuse Disposal. There shall be no burning of trash, garbage or other like household refuse, nor shall any property owner accumulate on their lot junked or unsightly vehicles or litter, refuse or garbage, except in receptacles provided for such purposes.

f. Concealment of Fuel Storage Tanks and Trash Receptacles. Fuel storage tanks and every receptacle for ashes, trash, rubbish or garbage shall be so placed and kept as not to be visible from any street, lot, parcel, or open space in the SPA, except at the times when refuse collections are made.

g. Travel Trailers, Motor Homes and Boat Storage. Travel trailers, motor homes (R.V.), or boats and trailers shall be stored within the building envelope and screened from any street, lot, parcel, or open

space area by screen fences. If stored in side yards, the minimum side yard shall be 12 feet.

h. Nuisances. No noxious or offensive activities, odors, or nuisances shall be permitted on any lot or parcel in the development. No refuse, unsightly or abandoned vehicles, debris, noxious material, discarded personal effects, or construction materials not for immediate use shall be permitted on any lot or portion thereof. It is incumbent upon all property owners to maintain their lots and yards in a neat, orderly and well-groomed manner, whether said lots are vacant or improved.

i. Completion of Construction. Construction of any improvement, once commenced, shall be pursued diligently to completion. Improvements not so completed or upon which construction has ceased for 90 consecutive days, or which have been partially or totally destroyed and not rebuilt within a reasonable period, shall be deemed nuisances. The County may remove any such nuisance or repair or complete the same at cost to the owner provided the owner has not commenced required work within 30 days from posting a notice to commence such work upon the property. Such notice shall state the steps to be taken to eliminate the nuisance.

j. Clothes Lines. No clothes lines shall be constructed or erected which would be visible from any street, other lot, or open space.

k. Garage. Every single-family dwelling unit constructed within the SPA shall have on the same lot or parcel enough covered and completely enclosed automobile storage space for at least two automobiles. On one-acre or large lots, garage doors shall be encourage to face side yards away from streets.

7. Landscaping

Landscape design should fit the particular use and blend with the natural environment. The lot concept limits the area in which a home owner may provide landscaping. The plant material must be selected from a predetermined list incorporated in this plan. The plant selection includes only drought tolerant and low water demand material. These factors contribute to a decreased average annual residential demand that is mandatory for implementation of this plan.

A specified number of trees are required in the front yard setback and transition zone to provide a "sense of place". Plant material selected from the incorporated list, per neighborhood, should be kept similar to strengthen neighborhood unity and identity.

Selection of materials should contain a mixture of plants with fast, medium, and slow growth rates and a variety of sizes should be planted to provide a more natural appearance.

The use of plants around dwelling units to reduce heating and cooling needs is encouraged. Evergreens along the north and west act as a windbreak to deflect winter winds. Deciduous trees planted on the south around the perimeter of the unit are encouraged to provide summer shade while allowing winter sun. Creation of earth berms to the windward side can also reduce heat loss.

Drainageways should be lined with native wildflowers, grasses, shrubs, and rocks and boulders to slow velocities. They will be graded to resemble a natural drainage swale and incorporated in the overall design.

Irrigation of plant material will utilize drip irrigation and other water conservation features as practical. The use of plumbed gray water storage systems will be investigated with the Health Department.

Within nine months of completion of the main dwelling unit, each lot or parcel shall be completely landscaped consistent with the landscape design guidelines and water budget incorporated in this plan. All landscaping shall be maintained to harmonize with and sustain the attractiveness of the development.

8. Fencing

All property lines from single-family dwelling units to the street shall be kept free and open.

A solid privacy fence may be constructed within the building envelope and limited to the rear of the house. Side yards will not be enclosed with a privacy fence in lots larger than 10,000 square feet. Fences shall be constructed of wood or masonry material and no fence will be over six feet in height. Developers will establish a typical privacy fence per neighborhood to promote neighborhood unity.

The transition zone and side yard may be fenced with open ranch style fencing. Fencing will be consistent within all neighborhoods. There shall be no chain link, woven wire or any type of wire fence within the development except for back yard pet enclosures and swimming pools.

9. Public Street and Monument Signs

On public streets the style of signage will be unique to the SPA. It will be uniform in style throughout the area. Subdivision entry signage shall be limited to monument signs of native materials and in conformance with design guidelines set forth in the commercial section of the plan.

10. Exterior Lighting

The functional objectives in providing exterior area lighting are to illuminate areas necessary for safe and comfortable use. In certain situations, area lighting can add to the aesthetic appeal of a site by

highlighting architectural features of a building or illuminating pathways and landscape plantings. In these instances, only the special features of a building or landscape should be illuminated. It should be noted that the standards and guidelines contained in this section address area lighting on individual properties, and not overhead street lighting along public and private rights-of-way.

On public streets the style of lighting standard will be unique to the SPA. It will be decorative and uniform in style and intensity throughout the area. Lighting shall be directed downward with no splay of lighting directed outward.

a. Standards.

i. Exterior lights shall not blink, flash or change intensity. String lights, building or roofline tube lighting, reflective or luminescent wall surfaces are prohibited.

ii. Exterior lighting shall not be attached to trees except for the Christmas season.

iii. Driveway, walkway, and building lights shall be directed downward.

iv. Fixture mounting height shall be appropriate to the purpose.

v. Illumination for aesthetic or dramatic purposes of any building or surrounding landscape utilizing exterior light fixtures projected above the horizontal is prohibited.

vi. Seasonal lighting displays and lighting for special events which conflict with other provisions of this section may be permitted on a temporary basis.

b. Guidelines.

i. Lighting Design. Exterior lighting should be designed as an integral part of the architecture and landscape and located in a manner that minimizes the impact of lighting upon adjacent structures and properties.

ii. Lighting Levels. Avoid consistent overall lighting and overly bright lighting. The location of lighting should respond to the anticipated use and should not exceed the amount of light actually required by users. Lighting for pedestrian movement should illuminate entrances, changes in grade, path intersections, and other areas along paths which, if left unlit, would cause the user to feel insecure. Lighting suppliers and manufacturers have lighting design handbooks which can be consulted to determine fixture types, illumination needs and light standard heights.

iii. Fixture Design. Exterior lighting fixtures should be simple in design and should be well-integrated with other architectural site features.

iv. Structural Lighting. Night lighting of building exteriors should be done in a selective fashion: highlight special recognizable features; keynote repeated features; or use the play of light and shadow to articulate the facade. The purpose of illuminating the building should be to add visual interest and support building identification. Harsh overall lighting of a facade tends to flatten features and diminish visual interest.

v. Lighting Height. As a rule, the light source should be kept as low to the ground as possible while ensuring safe and functional levels of illumination. Area lighting should be directed downward with no splay of lighting directed offsite. The height of light fixtures or standards must meet the County standards. Direct light downward in order to avoid sky lighting. Any light source over 10 feet high should incorporate a cut-off shield to prevent the light source from being directly visible from areas offsite. The height of luminaries should be in scale with the setting and generally should not exceed 10-12 feet.

11. Utilities

All utilities shall be underground on lots less than one acre. Undergrounding shall be encouraged for lots from one to two and a half acres and overhead on lots larger than two and a half acres. All individual services to each unit for all lot sizes shall be undergrounded from the neighborhood service line.

12. Prohibition Against Used Structures

No used buildings or structures, intended for use as a dwelling, shall be placed on any lot.

13. Ditches and Swales

Each owner shall keep drainage ditches and swales located on his lot free and unobstructed and in good repair and shall provide for the installation of such culverts upon his lot as may reasonably be required for proper drainage.

14. Resubdivision or Joinder of Lots

No lot shall be further subdivided. unless permitted by the SPA plan and regulatory zoning category applicable

X2

15. Drilling and Mining

No drilling, refining, quarrying, or mining operation of any kind shall be permitted on any lot.

16. Television or Radio Antennae and Towers

No television or radio antennae or tower shall be erected or used outdoors, whether attached to a building or structure, or otherwise. The placement of satellite discs shall be screened from view from any adjacent parcels, streets, or open space by locating in rear yards behind screened fences at a minimum. At such time as a community antenna television (CATV) system may be installed to service the development, each lot owner shall pay his proportionate share of standby, installation or service charges made pursuant to the franchise governing such system. This is provided, however, that such charges shall be comparable to those of similar installations in the CATV industry.

17. Failure to Enforce.

The various restrictive measures and provision of this declaration are declared to constitute mutual equitable covenants and servitudes for the protection and benefit of each lot in said subdivision and failure by DECLARANT or any other person or persons entitled so to do shall not serve to create any liability or responsibility to DECLARANT for its alleged failure to act. Failure to enforce any measure or provision upon violation thereof shall not stop nor prevent enforcement thereafter or be deemed a waiver of the right so to do.

18. Severability

The various measures and provisions of this declaration are declared to be severable, and the invalidity of an one measure or provision shall not affect any other measure or provision.

19. Subordination to Mortgages and Deeds of Trust

Nothing contained in this declaration shall impair or defeat the lien of any mortgage or deed of trust made in good faith and for value, but title to any property is subject to this declaration obtained through the sale or satisfaction of any such mortgage or deed of trust shall thereafter be held subject to all of the restrictions and provisions hereof.

20. Enforcement and Remedy

Each grantee of a conveyance or purchaser under a contract or agreement of sale by accepting a deed or contract of sale or agreement of purchase accepts the same subject to all of other covenants, restrictions, easements and agreements set forth in this declaration and agrees to be bound by the same.

Damages for any breach of the terms, restrictions and provisions of this declaration are hereby declared not to be adequate compensation, but such breach and/or the continuation thereof may be enjoined or abated by appropriate proceedings by the DECLARANT, or by an owner or owners of any other lot or lots in said subdivision. Court costs and attorney fees shall be awarded the prevailing parties of any legal action as deemed appropriate and awarded by the court.

21. Terms of Restrictions

These covenants, restrictions and agreements shall run with the land and shall continue in full force and effect until _____ at which time the same shall be automatically extended for successive periods of five years unless by a duly executed and recorded statement of the then owners of 75% or more of the lots in said subdivision elect to terminate or amend these restrictions in whole or in part. Said declarations of restrictions can be amended or modified at any time when

75% of the owners election to do so, provided however; that said amendment or modification is in compliance with the provisions of the Washoe County Code.

Note:

The following two items will be applicable in the event of an active architectural control committee.

22. Maintenance of Lots

All lots, whether occupied or unoccupied, and any improvements placed thereon, shall at all times be maintained in such a manner as to prevent their becoming unsightly, unsanitary or a hazard to health. If not so maintained, the architectural control committee shall have the right, through its agents and employees, to do so, the cost of which shall be borne by the owner. Neither the architectural control committee, nor its agents, employees or contractors, nor the DECLARANT, nor its agents, employees, or contractors shall be liable for any damage which may result from any maintenance work as performed.

23. Real Estate Signs

Professionally prepared signs of customary and reasonable dimension may be displayed on any lot advertising it, together with any improvements located thereon, for sale or lease. All other signs, bill boards, or advertising structures of any kind are prohibited except upon application to and written permission from the architectural control committee.

Note:

The following is an example of the architectural control committee section of the C. C. & Rs. Not all development projects within the plan area will be required to have an architectural control committee. In the

event a project does not have an architectural control committee, then applicants will be required to submit an application to the citizen advisory board with definitive design, materials and color combinations for their review and recommendation prior to submittal to the County of Washoe.

24. Architectural Control Committee

a. General Powers. All improvements constructed or placed on any lot must first have the approval of the committee as evidenced by the signatures of at least two of the members affixed to the plans submitted. Two sets of plans and specifications shall be submitted to the committee, which plans shall show the location of all improvements, if any, existing upon said lot, the location of the improvement proposed to be constructed, the color and composition of all exterior materials to be used, proposed landscaping, and any other information which the committee may require, including soil, engineering and geologic reports and recommendations.

b. Committee Membership. The committee shall be composed of three members, to be appointed by DECLARANT, at least one of whom shall be a representative of DECLARANT. Committee member shall be subject to removal by DECLARANT and any vacancies from time to time existing shall be filled by appointment by DECLARANT, or in the event of DECLARANT'S failure to do so within two months after any such vacancy, the then majority of the lot owners. The power to appoint or remove Committee members shall be transferred permanently to the lot owners upon:

i. A lapse of 18 months between the filing of the final map of the development, provided that 90% of the aggregate number of lots of the development have been sold by the DECLARANT; or

ii. A lapse of three years from the date of Final Subdivision Public Report of the Nevada Department of Real Estate.

c. Grounds for Disapproval. The committee may disapprove any plan of development:

i. Because of the reasonable dissatisfaction of the committee with grading plans, location of the proposed improvement on a lot, finished ground elevation, color scheme, finish, design, proportions, architecture, shape, height or style of the proposed improvement, the materials used therein, the kind, pitch or type of roof proposed to be placed thereon; or

ii. If, in the judgment of a majority of the committee reasonably exercised, the proposed improvement will be inharmonious with the development, or with the improvements erected on other lots.

d. Rules and Regulations. The committee may, from time to time, adopt written rules and regulations of general application governing its procedures which may include, among other things, required number of copies of plans and specifications; provisions for notice of approval or disapproval, including a reasonable time period for approval by reason of failure to disapprove.

e. Variances. The committee may grant reasonable variances or adjustments from the provisions of this declaration where literal application thereof results in unnecessary hardship and if the

granting thereof will not be materially detrimental or injurious to owners of other lots.

f. Certification of Compliance. At any time prior to completion of construction of an improvement, the committee may require a certification, upon such form as it shall furnish, from the contractor, owner, or a licensed surveyor, that such improvement does not violate any setback rule, ordinance or statute, nor encroach upon any easement or right-of-way of record.

g. Administrative Fees. As a means of defraying its expense, the committee may institute and require a reasonable filing fee to accompany the submission of plans and specifications, to be not more than one-fourth of 1% of the estimated cost of the proposed improvement, subject to a minimum fee of $75.00. No additional fee shall be required for resubmittal.

h. Liability. Notwithstanding the approval by the committee of plans and specification of its inspection of the work in progress, neither it, DECLARANT, nor any person acting in behalf of any of them shall be responsible in any way for any defects in any plans or specifications or other material submitted to the committee, nor for any defects in any work done pursuant thereto. Each person submitting such plans or specifications shall be responsible for the sufficiency thereof and the adequacy of improvements constructed pursuant thereto.

All covenants, conditions and restrictions herein contained which are required by the County of Washoe may also be enforced by the County of Washoe.

WARM SPRINGS VALLEY RANCH

By:_____

[Notary]

APPENDIX B

APPENDIX B

BASIS FOR ALLOCATION

The key element to managing the water resources in the Specific Plan Area is a metered community water system. The following allocation is based on a rate structure established by the County or G.I.D. that provides lower rates for conservation and higher penalizing rates for over use. (Refer to Plan Administration and Enforcement.) The water allocation is based upon the continuous implementation of the County's Stage Two Drought Restrictions.

Residential

According to the current Warm Springs Area Plan, subdivision of parcels creating new residential lots on individual domestic wells require dedication of 2.5 acre feet/year (AFY) of water rights to the County. This water budget accounts for this dedication in the 57% set aside element of the budget chart. The residential section of the budget is based on allocating water available per residential lot at .70 acre feet/year overall on a community water system. This number is based on the State Engineers permitted .57 AFY per residential lot allocation for an existing water system (Reno Park Water Company) and is also per the amount cited as an alternative to the Warm Springs water budget based on a mandatory water conservation program with low water demand vegetation landscaping and low demand water fixtures in the "Warm Springs Area Plan" of the Washoe County Comprehensive Plan, page 58, paragraph 2 and Policy WS.4.61. The .57 AFY is modified to .70 AFY based on larger residential lots proposed in the Plan (refer to the following basis for allocation). The recommended distribution of water per lot size on a community system is as follows:

LOT SIZE	NO. OF LOTS	WATER ALLOCATION PER LOT	ESTIMATED YEARLY WATER USAGE
1 - 1-1/2 acre lot	1266	.62 AFY	785.0 AFY
2 - 2-1/2 acre lot	237	1.12 AFY	265.4 AFY
TOTAL	1503	TOTAL	1050.4 AFY
		AVERAGE	.70 AFY/LOT

The average water allocation per residential lot equals .70 AFY.

The water use calculation is based on the following water consumption elements:

1. Domestic Use

   a. The average per capita domestic water use (not including irrigation) is 77 gallons/person/day. This is based on a non-conserving household. A conserving household using water conservation fixtures will reduce the domestic per capita water use to 60 gpd. Using current technology, ultra low flow fixtures could reduce domestic per capita water consumption to 52 gpd. (Source: "Residential Water Conservation Project, Summary Report" by Brown and Caldwell, June 1984; refer to copy in appendix.)

   b. The average household size is projected to be 2.5 persons.

   77 gallons/day x 365 days x 2.5 people =
   70,262.5 gallons/house/year =
   0.216 AF/house/year

   c. A monitoring system will be required to determine actual use and mandate design and allocation changes based on actual use. The monitoring system should include tensiometers on trees/shrubs at sample facility.

2. Landscape Irrigation Use

   a. Lawn Watering

   The watering requirements for the Warm Springs area are determined as follows:
   Water 0.5" twice per week for 16 weeks, water 0.75" twice per week for 12 weeks during the summer months.

   For a 100 square foot lawn area, we used the following calculation:

   (.5 x 2 x 16 x .62* = 9.92 x 100) = 992 gallons
   (.75 x 2 x 12 x .62* = 11.16 x 100) = 1116 gallons
   2108 gallons

   (*1" of water applied to one square foot surface area = .62 gallons)

   b. Trees and Shrubs

   The shrub and tree water consumption budget figures were determined using the following method:

The bermed saucer watering area of a mature tree was determined to be 4' diameter (3' for mature shrubs). The area of a 4' diameter saucer equals 12.5 square feet (7 sq. ft. for shrubs). The square foot area was multiplied by two feet which represents the preferred depth per watering to promote deep rooting and resistance to adverse conditions. This number represents cubic foot volume of soil to be watered which is multiplied by the water holding capacity of the soil (1.33 gallons per cubic foot of clay loam soil, Source: "Effectively Irrigating Landscape Trees" by Janet Hartin -- see appendix). The resulting gallonage figure represents the amount of water to be applied per watering:

mature tree (12.5 s.f. x 2 x 1.33 gallons = 33.25 gallons)
mature shrub (7.0 s.f. x 2 x 1.33 gallons = 18.60 gallons)

The watering frequency was determined as follows:

For an evergreen tree or shrub, water twice per week for the 12 week summer season, once per week for the remaining 16 weeks of the growth season and twice per month for the additional five months of the year.

evergreen trees and shrubs (2 x 12) + (1 x 16) + (2 x 5) = 50 waterings

For a deciduous tree or shrub, water twice per week for the 12 week hot summer season and once per week for the remaining 16 weeks of the growth season. No additional water is required for the winter months.

deciduous trees and shrubs (2 x 12) + (1 x 16) = 40 waterings)

The per tree water consumption budget figures are then derived by multiplying the amount of water per application times the watering frequency =

evergreen tree	33.25 gallons	x 50 waterings	= 1,662 gallons
evergreen shrub	18.60 gallons	x 50 waterings	= 930 gallons
deciduous tree	33.25 gallons	x 40 waterings	= 1,330 gallons
deciduous shrub	18.60 gallons	x 40 waterings	= 744 gallons

We have averaged the yearly water consumption of mature deciduous and evergreen trees to determine the budget amount per tree in our figures (1,496 gallons). The average yearly water consumption of mature deciduous and evergreen shrubs equals 837 gallons.

c. The intent of the plan is to mandate compliance with the per lot water allocation while at the same time providing alternatives to permit variety in individual landscape designs. The following chart provides a list of optional water use estimates that can be used in any combination on any lot provided the water allocation per lot is not exceeded.

TABLE 7

OPTIONAL LANDSCAPE USES - WATER CONSUMPTION		
Item	**Quantity**	**Yearly Water Use**
Turf	100 sq. ft.	2108 gallons
Vegetable / Flower Garden	100 sq. ft.	1612 gallons (based on 16 wk. watering season)
Deciduous Shrub	1 each	744 gallons
Evergreen Shrub	1 each	930 gallons
Deciduous Tree	1 each	1330 gallons
Evergreen Tree	1 each	1662 gallons

3. Animal Use

Livestock uses an average of 20 gallons of water per day:

20 x 365 = 7,300 gallons/animal/year

Per Policy W.S. 3.1.A, uses such as pastures, require dedication of water rights in addition to domestic rights.

4. Residential Water Use

Residential water usage figures by average lot size are listed utilizing the following water demand figures.

Lawn: The water requirement for lawn areas is as follows:

Water 0.5" twice per week for 16 weeks and water .75" twice per week for 12 weeks during summer months

(.50 x 2 x 16 x .62* = 9.92 x sq. ft.) = gallons per 16 weeks

(.75 x 2 x 12 x .62* = 11.16 x sq. ft.) = gallons per 12 weeks

gallons total per season

(* 1" of water applied to one square foot surface area = .62 gallons)

Tree: Number trees X 1496 = gallons per season

1496 = an average of deciduous and evergreen trees from Table 7

Domestic Use: Average household gallons per day based on 2.5 persons per household.

See basis for allocation 1b.

Refer to Appendix for supporting data.

a. 1 - 1-1/2 acre lot - .62 acre feet/year = 202,015 gallons

The recommended limit of lawn area for the 1 - 1-1/2 acre lot is 4,000 square feet.

9.92 x 4000	=	39,680 gallons
11.16 x 4000	=	44,640 gallons
		84,320 gallons

The plan requires ten trees per lot:

10 x 1,496	=	14,960 gallons
Domestic use	=	70,260 gallons
		169,540 gallons
		202,015 gallons
		-169,540 gallons
		32,475 gallons

Optional Uses

This leaves 32,475 gallons for selection of optional landscape elements (see Table 7).

b. 2 - 2-1/2 acre lot and larger - 1.12 acre feet/year = 364,930 gallons

The recommended limit of lawn area for the 2 - 2-1/2 acre or larger lots is 4,000 square feet.

9.92 x 4000	=	39,680 gallons
11.16 x 4000	=	44,640 gallons
		84,320 gallons

The plan requires five trees per lot:

5 x 1,496	=	7,480 gallons
Domestic use	=	70,260 gallons
		162,060 gallons
		364,930 gallons
		-162,060 gallons
		202,870 gallons

Optional Uses

This leaves 202,870 gallons for selection of optional landscape elements (see Table 7).

TABLE 7a.

RESIDENTIAL WATER USAGE - GALLONS

Lot Size	Water Allocation	Domestic Use	Required Trees	Required Turf	Total	Residual/ Optional Usage
1-1-1/2 AC	.62 AFY 202,015 Gals.	70,260	14,960	84,320	169,540	32,475
2-2/12 AC	1.12 AFY 364,930 Gals.	70,260	7,480	84,320	162,060	202,870

5. Irrigation Requirements

Each residential lot will be required to install an irrigation system with automatic controller and backflow prevention device to meet County/State health codes. The irrigation system shall include an overhead spray system for any turf areas, with uniform head to head coverage and matched sprinkler head precipitation rates. The system shall also include a drain down method for winterization.

All trees, shrubs, and groundcovers shall be watered with a drip system with a separate control clock or a dual program controller. Each tree, shrub, or groundcover shall be watered with individual drip emitters or collectively in groups with micro sprayers.

6. Landscape and Irrigation Plan Submittal Requirement

Each future homeowner or builder will be required to submit landscape and irrigation plans for approval as a part of the building permit application process. The plans shall be prepared by a qualified landscape industry professional, landscape contractor, or a landscape architect. The County's landscape ordinance, which is in draft form now, will be incorporated in the Plan once the ordinance is adopted. It will be used as a guideline when reviewing plans.

The landscape plan shall include a site base map prepared to a 1"=20' minimum scale with the house and driveway footprint, property lines, utility locations, etcetera. This base map must clearly show proposed landscape areas with square footage area calculations to meet the water usage requirements specified in this plan. In addition to the above, the landscape plan must include:

- a plant species list keyed to plant locations on the plan. The plant list must include plant sizes and quantities;
- an indication of surface material(s) in non-landscaped areas; and,
- agricultural soils test results and proposed soils improvement/amendment methods.

The irrigation plan shall be prepared to scale on the same base map as the landscape plan. The irrigation plan must include the following:

- point of connection to water source;
- location, type and installation detail of backflow prevention device;
- remote control valve location, manufacturer's name, product number, size and gallons per minute for each lateral zone;
- irrigation main and lateral line type, size and depth of bury;
- sprinkler head locations, manufacturer's name, product number, nozzle size and number, radius, gallons per minute and psi operation rate;
- drip system - valve location and size; lateral line type and location; emitter type; product number and amount per plant; and
- control clock manufacturer's name, product number and installation location.

Commercial

There are 10 acres of Village Center Commercial and 10 acres of Highway Commercial designated on the plan. To determine the water allocation, the following factors were considered:

Building Usage/Allocation

1. Total square footage of buildings per parcel was based on a floor area ratio (F.A.R.) of 0.15, or 15% building coverage at one story. This is the maximum permitted in the plan (refer to Land Use). This translates to a potential for 130,680 square feet of building area at full commercial build-out.

    a. Utilizing the occupant load factor for retail sales of one per 30 square feet for 60% of the commercial square footage and 40% for office at one per 100 square feet[1] establishes the following occupancy load:

[1] Source: UBC 1988; page 665

	Max. Permitted Area	Total Occupants
Retail	78,403 sq. ft. @ 30[1] =	2,600
Office	52,272 sq. ft. @100[1] =	522
	130,680 sq. ft. area	3,122

b. Utilizing the minimum plumbing facilities of one water closet per 25 people[2], one lavatory per 15 people[2], and one drinking fountain per 75 people[2], the following fixture units are estimated:

TYPE	# OF FIXTURES	# OF FIXTURE UNITS
Water closets	3122 ÷ 25 = 125	@ 3 FU/Fix 375
Lavatories	3122 ÷ 15 = 208	@ 1 FU/Fix 208
Drinking Fountains	3122 ÷ 75 = 42	@ 1 FU/Fix 42
		625

Utilizing Westpac's ratio of 15 g.p.d. (gallons per day) supply per fixture unit creates a water usage estimate of 9,375 gallons per day at build-out. This translates to 10.6 acre feet per year.

Landscape Usage/Allocation

The plan design guidelines require 20% landscape coverage of the commercial sites, or 4 acres of the 20 acres planned for. Utilizing the same .354 acre feet/acre basis (.57 AFY minus domestic use) as the residential uses would equal a total of 7.08 acre feet or 2,306,868 gallons of water for landscape irrigation. The following chart develops the total water use per acre of landscape area:

10,890 sq. ft. of turf (25% coverage) at 21 gallons/sq. ft.	228,690 gallons
58 trees (one tree per 750 sq. ft.) at 1,496 gallons/mature tree	86,768 gallons
290 shrubs (five shrubs per tree) at 837 gallons/mature shrub	242,730 gallons
= total water use per acre of landscape	558,188 gallons

558,188 gallons equals the water use per acre of landscape coverage. Multiply this number times Four acres for the total landscape water consumption for the commercial area at buildout.

Note: [1] Source: U.B.C. 1988 pg. 665

[2] Source: U.P.C. 1988, pg. 153

Total commercial landscape consumption would equal 2,232,752 gallons or 6.8 acre feet.

As with residential, options for variations in material mixes should also be considered, see Table 8.

The controlling factor is 0.354 acre feet per acre, and all proposed commercial developments will be required to submit water use calculations for the proposed landscape plan to demonstrate compliance with the design guidelines.

Total commercial usage allocated 10.6 AFY building usage plus 6.8 AFY landscape usage equals 17.4 acre feet.

TABLE 8

OPTIONAL LANDSCAPE USES - WATER CONSUMPTION		
Item	**Quantity**	**Yearly Water Use**
Turf	100 sq. ft.	2108 gallons
Deciduous Shrub	1 each	744 gallons
Evergreen Shrub	1 each	930 gallons
Deciduous Tree	1 each	1330 gallons
Evergreen Tree	1 each	1662 gallons

1. Irrigation Requirements

   Each commercial development will be required to install an irrigation system with automatic controller and backflow prevention device to meet County/State health codes. The irrigation system shall include an overhead spray system for any turf areas with uniform head to head coverage and matched sprinkler head precipitation rates. The system shall also include a drain down method for winterization.

   All trees and shrubs shall be watered with a drip system with a separate control clock or a dual program controller. Each tree, shrub, or groundcover shall be watered with individual drip emitters or collectively in groups with micro sprayers.

2. Landscape and Irrigation Plan Submittal Requirement

Each commercial project will be required to submit landscape and irrigation plans for approval as a part of the building permit application process. The plans shall be prepared by a qualified landscape industry professional, landscape contractor, or a landscape architect.

The landscape plan shall include a site base map prepared to a 1"=20' minimum scale with the building and driveway and parking lot footprint, property lines, utility locations, etcetera. This base map must clearly show proposed landscape areas with square footage area calculations to meet the water usage requirements required in this plan. In addition to the above, the landscape plan must include:

- a plant species list keyed to plant locations on the plan. The plant list must include plant sizes and quantities;
- an indication of surface material(s) in non-landscaped areas; and,
- agricultural soils test results and proposed soils improvement/amendment methods.

The irrigation plan shall be prepared to scale on the same base map as the landscape plan. The irrigation plan must include the following:

- point of connection to water source;
- location, type and installation detail of backflow prevention device;
- remote control valve location, manufacturer's name, product number, size and gallons per minute for each lateral zone;
- irrigation main and lateral line type, size and depth of bury;
- sprinkler head locations, manufacturer's name, product number, nozzle size and number, radius, gallons per minute and psi operation rate;
- drip system - valve location and size; lateral line type and location; emitter type; product number and amount per plant; and
- control clock manufacturer's name, product number and installation location.

Community Facilities

There are two community facilities that do not have water allocations in other sections of this water budget. They are the proposed elementary school site and the proposed county service center in the Village Center.

Elementary School Sites

The domestic water use of the elementary schools is calculated as follows:

Washoe County School District's method for determination of the number of elementary school age students is to multiply the population times 9.4%. Washoe County Planning staff utilizes 9.8% figure in determining elementary school age students.

4,010 (general rural population) + 4,352 (SPA population) x .098 = 819 elementary students.

The average daily water use of elementary students equals 5 gallons per student per day. (Source: Dale Sanderson, Washoe County School District). There are 180 days per school year. The yearly domestic water use based on the total population of the Warm Springs area for both of the Warm Springs elementary schools is:

819 students x 5 gpd x 180 days = 737,100 gallons, or 2.3 acre feet.

The yearly domestic water use based on the student population of the SPA is:

426 students x 5 gpd x 180 days = 383,400 gallons, or 1.2 AFY.

A five-acre playground/play field allocation has been set aside to accommodate recreational opportunities at the school site. The water use for five acres of turf grass play field equals 4,591,224 gallons, or 14 acre feet of demand for the school playground site.

The total allocation for the school site utilizing student population of the SPA would be 15.2 acre feet.

This compares with an average consumption of other schools of similar size in the Washoe County District. Utilizing data obtained from the district (refer to appendix), the following was yearly usage during the 1984-1985 and 1985-1986 school years prior to the current drought.

School	# of Students	Water Usage (AFY)	Average AFY/ 100 Students
Dunn	523	13.39	2.6
Lenz	472	14.25	3.0
Warner	554	5.33	1.0
Towles	512	2.42	0.5
Gomm	329	5.55	1.4
Beck	567	9.02	1.6
Anderson	395	5.56	1.4
Elmcrest	460	4.70	1.0
Mt. Rose	409	3.86	0.9
Dodson	668	12.40	1.9
AVERAGE	**489**	**7.65**	**1.56**

426 students x 1.56 AF/100 students = 6.64 AFY

Typically, the SPA school water demand is 14 AFY for turf irrigation, 1.2 AFY for domestic use, approximately 7 AFY above the average 7.65 AFY water usage.

County Service Center

The County Comprehensive Plan designates a typical service center facility that could be developed by the County in the Village Center. This center would be built in phases on a five acre site. (Refer to Washoe County Comprehensive Plan.)

Building Usage/Allocation

1. County standards in the Land Use and Transportation Element of the Comprehensive Plan for Public Services and Facilities establishes a standard of 8.4 employees per acre for use in calculating water and sewer demand for community facilities.

	County Standard	Total Occupants
5 AC Site	8.4 Employees per AC	42
*This approximates 2% of the total current workforce of the County to serve less than 2% of the total current population of the County, if the SPA were built out today.		

a. Utilizing the minimum plumbing facilities of one water closet per 25 people[2], one lavatory per 15 people[2], and one drinking fountain per 75 people[2], the following fixture units are estimated:

TYPE	# OF FIXTURES	# OF FIXTURE UNITS
Water closets	42 ÷ 25 = 2	@ 3 FU/Fix 6
Lavatories	42 ÷ 15 = 3	@ 1 FU/Fix 3
Drinking Fountains	42 ÷ 75 = 1	@ 1 FU/Fix 1
		10

Utilizing Westpac's ratio of 15 g.p.d. (gallons per day) supply per fixture unit creates a water usage estimate of 150 gallons per day at build-out. This translates to 0.175 acre feet per year.

Landscape Usage/Allocation

The plan design guidelines require 20% landscape coverage of the service center site, or 1 acre of the five acres planned for. Utilizing the same .354 acre feet/acre basis (.57 AFY minus domestic use) as the residential uses would equal a total of 1.77 acre feet or 576,673 gallons. The following chart develops the total water use per acre of landscape area:

10,890 sq. ft. of turf (25% coverage) at 21 gallons/sq. ft.	228,690 gallons
58 trees (1 tree per 750 sq. ft.) at 1,496 gallons/tree	86,768 gallons
290 shrubs (5 shrubs per tree) at 837 gallons/shrub	242,730 gallons
= total water use per acre of landscape	558,188 gallons

558,188 gallons equals the water use per acre of landscape coverage. Multiply this number times one acre to get the total landscape water consumption for the service center site.

Total service center landscape consumption would equal 558,188 gallons or 1.7 acre feet.

Potential options for variations in material mixes should also be considered where appropriate, see Table 8.

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[2]Source: U.B.C. 1988, Page 153

The controlling factor is .354 acre feet per acre, and all proposed county development will be required to submit landscape and irrigation plans with water use calculations to demonstrate compliance with the design guidelines.

Total service center usage allocated equals 2.4 acre feet.

Total community facilities usage allocated equals 17.5 acre feet.

Business Park

There are 47 acres of restricted business park designated on the plan. To determine the water allocation, the following factors were considered:

Building Usage

1. In the Land Use and Transportation Element of the County Comprehensive Plan, standards establish 5.8 employees per acre (industrial land uses) and 32.2 employees per acre (office commercial land uses) for use in calculating water and sewer demand.

	County Standard	Total Occupants
28 AC Manufacturing	5.8 Employees/Acre	162
19 AC Office	32.2 Employees/Acre	612
		774*
* This approximates one job per every two households for the SPA at buildout.		

a. Utilizing the minimum plumbing facilities of one water closet per 25 people[2], one lavatory per 15 people[2], and one drinking fountain per 75 people[2], the following fixture units are estimated:

[2] Source: U.B.C. 1988, Page 153

TYPE	# OF FIXTURES	# OF FIXTURE UNITS
Water closets	774 ÷ 25 = 31	@ 3 FU/Fix 93
Lavatories	774 ÷ 15 = 52	@ 1 FU/Fix 52
Drinking Fountains	774 ÷ 75 = 10	@ 1 FU/Fix 10
		155

Utilizing Westpac's ratio of 15 g.p.d. (gallons per day) supply per fixture unit creates a water usage estimate of 2,325 gallons per day at build-out. This translates to 2.5 acre feet per year.

Landscape Usage/Allocation

The plan design guidelines require 20% landscape coverage of the business park, or 9.4 acres of the 47 acres planned for. Utilizing the same .354 acre feet/acre basis (.57 AFY minus domestic use) as the residential uses would equal a total of 16.6 acre feet or 5,408,347 gallons. The following chart develops the total water use per acre of landscape area:

10,890 sq. ft. of turf (25% coverage) at 21 gallons/sq. ft.	228,690 gallons
58 trees (one tree per 750 sq. ft.) at 1,496 gallons/tree	86,768 gallons
290 shrubs (five shrubs per tree) at 837 gallons/shrub	242,730 gallons
= total water use per acre of landscape	558,188 gallons

558,188 gallons equals the water use per acre of landscape coverage. Multiply this number times 9.4 acres to get the total landscape water consumption for the business park site.

Total business park landscape consumption would equal 5,246,967 gallons or 16 acre feet.

Options for variations in material mixes should also be considered where appropriate, see Table 8.

The controlling factor is .354 acre feet per acre, and all proposed business park developments will be required to submit landscape and irrigation plans with water use calculations to demonstrate compliance with the design guidelines.

Total business park usage allocated equals 23 acre feet.

Golf Course and Open Space

Golf Course

The plan currently designates 160 acres for a golf course. The intent of the plan is to use existing agricultural wells and not include the course in the community water system. Any proposed golf course will be required to submit water use calculations for the proposed course.

Open Space

The plan currently designates the following open spaces:

Golf Course or Open Space	160 acres
Other Open Space	280 acres
Total Open Space	340 acres

Community Park

School Site and Five-Acre Park	5 acres
Community Park	30 acres
Equestrian Center	16 acres
Total Park Space	51 acres

The following allocation was made based on the assumption that the park would include a 5 acre active use playfield area planted with a durable tall fescue grass mixture and the rest of the park area would have a 50% turf area/landscape coverage and would be planted with a lower water use turf mixture or native grasses and wildflowers.

- Playing field/playground 5 acres

  918,244.8 gal/ac/year[1] = 2.8 acre feet/acre or 14 acre feet total
  trees 65,824 gal/ac/year[3] = .2 acre feet/acre or 1 acre foot total

Notes: [1]0.5 inches twice a week for 16 weeks and .75 inches twice per week for 12 weeks during the summer months.

[3]1,496 gal/tree/year, 44 trees/acre

- Open Areas/Equestrian Facilities 12.5 acres

  turf 540,144 gal/ac/year[2] = 1.6 acre feet/acre or 20 acre feet total
  trees 65,824 gal/ac/year[3] = .2 acre feet/acre or 2.5 acre feet total

Total allocation for the community park would be 37.5 acre feet.

The Community Park would be irrigated from existing agricultural wells and would not be included In the community water system.

All Other Open Space

The plan designates 296 acres of other open space. The following allocation is based on reseeding and reestablishing native landscape cover on all open space areas disturbed during construction activity. Upon native landscape reestablishment, the supplemental irrigation will be converted to use for development of ornamental landscape with low water consumptive native grasses, trees, shrubs and wildflowers for up to 22% or 65 acres of open space area.

- Open Space Landscape Area - 65 acres

  Grasses: 540,144 gal/acre/year[1*] = 1.6 acre feet/acre or 106 acre feet
  Trees: 32,912 gal/acre/year[2*] = 0.1 acre feet/acre or 6 acre feet total

Total allocation for all other open space would be 112 acre feet.

In all other open space, the intent of the Plan is to not disturb the areas and retain existing cover.

Individual Lot Open Space

Other open space is designated for individual lots through the design guidelines for residential development. This open space is in addition to the acreage noted above. The intent of the plan is to retain existing cover in these areas and not disturb these designated areas. Some of these open space corridors may become special entry features for neighborhoods or be included within an SPA trail system.

Notes: [1]0.5 inches twice a week for 16 weeks and .75 inches twice per week for 12 weeks during the summer months.
[2]0.5 inches once a week for 16 weeks and 0.5 inches twice per week for 12 weeks during the summer months.
[3]1,496 gal/tree/year, 44 trees/acre

Any proposed landscaping of these areas would also be irrigated from agricultural wells and would not be included in the community water system.

Any proposed open space landscaping included in a development proposal will be required to submit water use calculations for the proposed landscaping.

APPENDIX C

COOPERATIVE EXTENSION
UNIVERSITY OF CALIFORNIA
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EFFECTIVELY IRRIGATING LANDSCAPE TREES

Authors are: Janet Hartin, UC Cooperative Extension, San Bernardino County, Dennis Pittenger, UC Urban Horticulture Specialist, UC Riverside, and J. L. Meyer, UC Soils & Irrigation Specialist, UC Riverside.

Introduction

Most landscape trees require at least some water throughout the establishment period. While scheduling landscape irrigations based on reference evapotranspiration (ET_o) can play an important role in water conservation, the largest water savings is usually realized through proper water management.

While large amounts of water are often wasted in turfgrass sites due to poor irrigation efficiency, substantial water can also be lost around landscape trees through mismanagement. Examples are: sprinklers applying large volumes of water to sidewalks and streets near trees, clogged sprinklers, broken sprinklers, and, vegetation growing around sprinklers.

Scheduling adequate labor and time to routinely check and correct these problems is necessary before irrigation scheduling can be effective. Otherwise, water and labor will continue to be wasted and trees may become stressed.

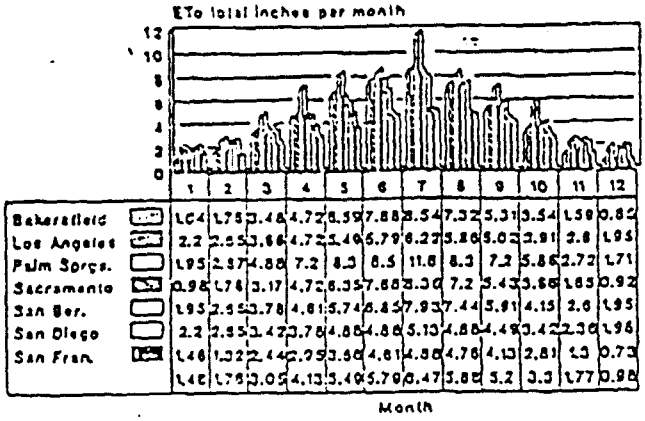
Irrigation Scheduling

Irrigation scheduling entails knowing when to water and how much water to apply. There are two methods of estimating how much water to apply, based on climatic zones throughout California: real-time reference evapotranspiration (ET_o), supplied through the California Irrigation Management Information System (CIMIS), or historical ET_o, which is an average (mean) of several years of meteorological data. ET_o is the amount of water taken up by 4-6" pasture grass in a healthful, non-stressed condition.

Both real-time and historical ET_o methods use formulas that account for solar radiation, air temperature, relative humidity, and wind speed; these are the environmental constituents that determine plant water need. Historical ET_o reported monthly for cities throughout California is available in UC Cooperative Extension Publication #21426 Determining Daily Reference Evapotranspiration (ET_o), ($1.00) authored by R.L. Snyder, W.O. Pruitt, and D.A. Shaw.

The following table indicates historical ET, for several California cities, as published in UC DANR publication #21426:

AVERAGE ETo



Bakersfield	LC4	L75	3.48	4.72	6.35	7.88	8.54	7.32	5.31	3.54	L58	0.82
Los Angeles	2.2	2.85	3.66	4.72	5.49	6.79	6.27	5.86	5.02	3.91	2.8	L95
Palm Sprgs.	L95	2.37	4.88	7.2	8.3	8.5	11.8	8.3	7.2	5.85	2.72	L71
Sacramento	0.98	L76	3.17	4.72	6.35	7.88	8.30	7.2	5.43	3.66	L85	0.92
San Ber.	L95	2.85	3.78	4.81	5.74	6.85	7.93	7.44	5.81	4.15	2.8	L95
San Diego	2.2	2.85	3.42	3.78	4.88	4.88	5.13	4.88	4.49	3.42	2.36	L96
San Fran.	L48	1.32	2.44	2.95	3.66	4.81	4.88	4.76	4.13	2.81	1.3	0.73
	L48	L76	3.05	4.13	5.49	5.79	6.47	5.88	5.2	3.3	L77	0.88

In the case of agronomic crops, orchard plantings, and turfgrasses occupying large areas, crop coefficients (Kc) are often determined for a species, by the following formula:

$$\text{species water use} = Kc \times ET_o$$

Because landscape trees are planted in varying densities and are often mixed with shrubs, groundcovers, and turfgrasses, crop coefficients (Kc) cannot be legitimately used to schedule irrigations of landscape trees. However, minimum irrigation requirements of landscape tree species can be determined in experimental plantings in open fields, not confounded by surrounding vegetation, buildings, or other restrictions.

While water requirements differ among landscape tree species, preliminary research at South Coast Field Station by the author indicates that four species of commonly-planted landscape trees (Liquidambar styraciflua [Liquidambar], Cupaniopsis anacarioides [Carrot Wood], Quercus ilex [Holly Oak], and Ficus microcarpa nitida 'Green Gem' [Indian Laurel Fig]) show no difference in trunk circumference or size when irrigated at 20, 40, 60, or 80% ET_o, based on real-time CIMIS for the first four seasons, after transplanting from 15-gallon containers.

Water needs of these four tree species may change when placed in denser, mixed plantings and in various microclimates. While there is no conclusive formula for determining minimum water needs in these situations, research on mature orchard trees indicates that these trees can be maintained in a healthful, productive state at a Kc of 0.5.

Since landscapes usually vary substantially from orchard settings, here are some general guidelines to help you determine how water requirements of landscape trees vary in several situations:

- Water needs of immature landscape trees are less than water needs of mature trees. Since evapotranspiration rates depend on the percentage of ground shaded by a plant, younger trees use less water, but may require more frequent water application. The percent of ground shaded can be determined by estimating the percentage of ground surface area shaded by the tree (or group of trees) at noon. When 60% or more of the ground is shaded, young trees require approximately the same amount of water as mature trees.

- The denser the landscape planting, the more water is usually needed, due to greater transpirational leaf area.

- Landscape trees in median strips and those surrounded by pavement or structures will require more water than those surrounded only by vegetation.

- Landscape trees planted in shade, and on the north side of structures require less water than those in full sun.

Knowing <u>when</u> to irrigate landscape trees is as important as knowing how much water to apply. Soil texture and species preference largely determine when to irrigate.

Using a water budget approach to schedule landscape irrigations is often useful. To develop a budget, determine the water-holding capacity of the soil, and the soil depth to where you wish to irrigate. The following table compares available water in various textures of soil:

Soil Texture	In. of available water per foot of soil depth*	Gallons per cubic of soil
Sand	0.5 - 1.0"	0.33 - 0.67 g
Sandy loam	1.0 - 1.5"	0.67 - 1.00 g
Clay loam	1.5 - 2.0"	1.00 - 1.33 g
Clay	1.5 - 2.5"	1.00 - 1.67 g

*One inch of water covers the soil surface one inch deep. One gallon of water covers one square foot of soil 1.5" deep.

In general, trees should be irrigated to a depth of at least two feet. This can promote deeper rooting and a mature tree, that is less prone to failure under adverse conditions such as high winds.

To determine the total water budget per tree, multiply the average water-holding capacity of the soil by two feet. For example, a sandy loam soil holding one inch of available water, multiplied by two feet of homogeneous, non-layered soil, equals two inches of water at field capacity.

In general, irrigating landscape trees at about 50% soil-moisture depletion is advised, although species do vary in their allowable depletion rates. When ET_c accumulates to 50% depletion, it is time to refill the soil profile completely and repeat the cycle. This depletion rate can be determined by adding up the ET_c for each day since the last irrigation.

Additional Methods of Conserving Water Around Landscape Trees:

- Irrigate trees early in the morning to reduce soil evaporation.
- Irrigate trees separately from surrounding plants whenever possible, using an independent controller.
- Do not routinely add soil amendment to planting holes. In general, no amendments are necessary, and can lead to layered soil, preventing water infiltration.
- Trees benefit most from spring and summer irrigations. When water is scarce, one or two thorough spring irrigations may supply enough water for the entire season.
- Keep turfgrass and other plants at least one foot from tree trunks. This promotes faster tree growth and reduces competition for water. Also, tree damage from weed whips and lawnmowers is avoided.
- Apply mulch around trees, keeping it several inches from tree trunks. Mulch reduces water evaporation from soil, buffers soil temperature, and reduces weeds. Irrigate through mulch into soil.
- Control weeds around trees. They compete for water and nutrients, and can harbor insects and diseases.
- Avoid soil compaction around trees. Compaction restricts water movement into soil and decreases oxygen. Keep construction activities several feet from tree trunks.
- Do not routinely fertilize landscape trees. Nitrogen causes new growth flushes, requiring additional water.
- Prune trees according to the Western Chapter International Society of Arboriculture (WC ISA) guidelines. Excess pruning and/or improper pruning stimulates shoot growth which increases water demand.

Summary

Effectively irrigating landscape trees involves: 1) proper water management; and 2) irrigation scheduling. Scheduling irrigations without routinely servicing irrigation hardware is not an effective irrigation program. In cases where water management is an integral part of the landscape maintenance program, additional water savings can usually be realized by scheduling irrigations based on real-time or historical ET_c. Employing other recommended practices, such as use of mulch, weed control, keeping surrounding vegetation several inches from tree trunks, and not routinely fertilizing landscape trees, can further enhance tree health and decrease water waste.

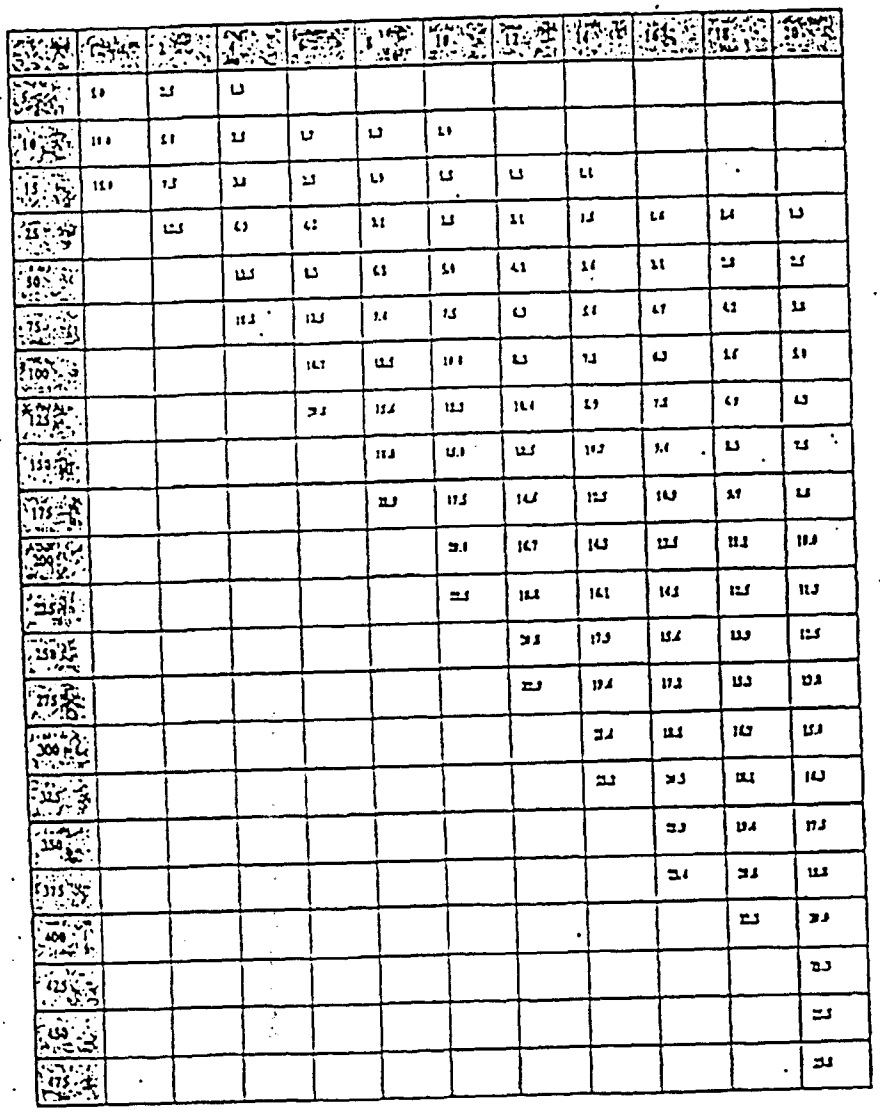
Helpful Equations

1. Gallons/day = Sq. ft. irrigated x plant water use (in/day) x 0.623
2. Gallons/hour = # of emission devices x discharge rate per emitter
3. Operating time (hrs/day) = gal/day divided by gal/hr

Hours of operation per day for various application rates (hours/day) and crop water use (gallons/day)

Application rate (gallons/ hour)

Crop Water Use (gallons/ day)



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TURFGRASS SELECTION AND MANAGEMENT TO ACHIEVE MAXIMUM WATER CONSERVATION

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INTRODUCTION

Water conservation is receiving a great deal of attention in national and regional publications, and rightly so. A dimension of water usage that has been receiving particular attention involves water inputs into urban landscapes. One of the reasons for this is that it is a highly visible activity in comparison to many day-to-day aspects of water usage. Unfortunately, a considerable amount of mis..formation, partly due to misunderstandings of terminology, has occurred in newspapers and weekly news magazines. Accordingly, it is appropriate to define the terminology that will be used in this paper and its implications.

Evapotranspiration (ET) is defined as the total amount of water transpired from plants and evaporated from associated soil surfaces (1, 2). This is what actually is measured in experimental investigations. Another term commonly used is water use rate, which is defined as the total amount of water required for turfgrass growth plus the quantity lost by transpiration and evaporation from plant and soil surfaces, respectively. The water use rate in absolute terms is only slightly higher than the evapotranspiration rate. Consequently, there is a tendency to use these two terms interchangeably in non-scientific articles. Turfgrass evapotranspiration rates are quantitatively measured via the water balance method using minilysimeter techniques. Although at first it might appear to be a simple technique, it proves to be quite complex in terms of utilizing the proper methodology that ensures repeatable results.

Evapotranspiration rate and drought resistance tend to be used interchangeably by many. Actually, drought resistance encompasses entirely different physiological processes than evapotranspiration (1, 2). Drought resistance is a general term utilized to encompass a range of mechanisms whereby plants withstand periods of dry weather. There are three primary components of drought resistance: (a) dehydration avoidance, which is the ability to remain green during the progression of drought stress; (b) dehydration tolerance, which is the ability to endure low tissue water deficits caused by drought; and (c) escape. A species may have excellent drought resistance, but also have a very high evapotranspiration rate when soil moisture is available. Unfortunately many popular articles discuss water conserving plants that are only drought resistant. Typically, the suggestion is to plant these into landscapes in combination with drip irrigation systems. Those species with a high evapotranspiration rate, even though they are drought resistant, would in no way behave as water conserving plants. Thus, it is very important for both authors and readers to distinguish between evapotranspiration rate and drought resistance characteristics of individual species when addressing the issue of water conservation in landscapes.

TURFGRASS SPECIES - GENOTYPE DIVERSITY IN EVAPOTRANSPIRATION RATES

Detailed investigations of evapotranspiration rates involving inter- and intraspecies characterizations (2, 3, 5, 6), plus plant morphological parameters involved in the mechanistic control of evapotranspiration have been pursued for the past twelve years as a major research thrust of this project. The interspecies characterization of ET rates initially involved assessment of the maximum ET rates under high evaporative demand and nonlimiting moisture (3, 5, 6). Subsequently, intraspecies characterizations of the major warm-season turfgrass species has been underway at Texas A&M University in College Station. The findings from a standardized series of studies are summarized in Table 1, along with the results for three major cool-season turfgrasses assessed at the University of Nebraska under the leadership of Dr. R. C. Shearman (7, 8, 9).

These investigations were selected for the summary table because they were conducted under representative summer, field, cultural conditions, with one exception, and under nonlimiting soil moisture status. The latter situation is required to eliminate differential root effects so the actual evapotranspiration differentials among genotypes can be delineated. The genotypes within each species are representative of the major cultivars now in use in North America. Note that the Texas and Nebraska locations would impose a higher midsummer evaporative demand on the warm-season and cool-season turfgrass species, respectively, than would be the case if the same turfgrass species and cultivars were grown in more northerly locations in North America.

Among the seven species compared, the bermudagrass genotype grouping included cultivars with the lowest ET rate means, followed by zoysiagrass and Kentucky bluegrass. Ranking intermediate were centipedegrass and St. Augustinegrass. Tall fescue and perennial ryegrass were the highest in both the minimum and maximum genotype ET rate means. These data emphasize that when selecting water conserving turfgrasses in terms of low evapotranspiration rates it is important to specify the cultivar as well as the turfgrass species. Note in terms of actual rates, the evapotranspiration level would be considerably lower during the spring and fall growing seasons as well as during periods when the turfgrasses would be under partial water stress (6) The ET rate could easily be lower by 50% over a period of time under these conditions of modest evaporative demand and/or minimal irrigation.

In terms of genetic diversity in evapotranspiration rates, the bermudagrasses exhibited the greatest range, but also encompassed the largest number of cultivars. Kentucky bluegrass ranked second. These two species have received greater emphasis from the breeding standpoint on a long term basis than most other species. In contrast, centipedegrass and St. Augustinegrass had a very narrow range in ET rates. This may represent a lack of emphasis on the part of turfgrass breeders in selecting for low ET rate genotypes, plus very minimal overall breeding emphasis on these two species over the years.

Actually, there has been a void in developing water conserving turfgrasses across most turfgrass species. This need must receive much more attention by turfgrass geneticists in the future. It would be anticipated that if a comparable degree of emphasis was placed on this characteristic as has been placed on certain dimensions of turf density, texture, color, and disease resistance, considerable improvement may be possible in terms of reduced ET rates of turfgrasses.

Table 2. FIELD EVAPOTRANSPIRATION (ET) COMPARISONS AMONG TURFGRASS CULTIVARS WITHIN EACH OF SEVEN SPECIES UNDER NON-LIMITING SOIL MOISTURE

Mean Evapotranspiration Rate Per Year (mm per day)			Turfgrass Common and Scientific Names	Number of Cultivars	Location	Duration of Study
Minimum	Maximum	Study Mean Over All Years				
2.9	6.3	5.2	Bermudagrass (Cynodon spp.)	24	Texas	3 years
3.8	4.7	4.2	Zoysiagrass (Zoysia spp.)	11	Texas	3 years
3.9	6.3	5.3	Kentucky bluegrass (Poa pratensis)	20	Nebraska	*
4.2	4.7	4.5	Centipedegrass (Eremochloa ophiuroides)	6	Texas	3 years
4.5	5.1	4.7	St. Augustinegrass (Stenotaphrum secundatum)	10	Texas	3 years
6.2	7.1	6.8	Tall fescue (Festuca arundinacea)	6	Nebraska	1 year
6.2	8.0	7.8	Perennial ryegrass (Lolium perenne)	12	Nebraska	2 years

*Growth chamber study maintained at 95° F (35 C).

DISCUSSION

A primary plant parameter affecting evapotranspiration rates across a broad range of grasses and dicotyledonous species is leaf area. In the case of turfgrasses, as the nitrogen fertility level or cutting height is increased there is a corresponding increase in leaf area and associated evapotranspiration rate. Ongoing research emphasizes that perennial grasses are relatively low water users. Statements declaring lawns and turfgrasses as high water consumers are misdirected in many cases. Actually, the major grasslands of the world tend to be located in relatively dry, semiarid climatic regions. The main problem involves improper irrigation practices. It is the human element in terms of improper irrigation practices that results in the so-called high water use on turfed landscape areas. Most of this wasted water is not even consumed by plants, but is lost directly as runoff.

Research findings emphasize that a range of turfgrass species and cultivars are available which are extremely low water users. In a 1990 Texas Agricultural Experiment Station Progress Report entitled "Comparative Dehydration Avoidances and Drought Resistances Among Major Warm-season Turfgrass Species and Cultivars" five turfgrass genotypes sustained a green, quality turf for an extended period of 158 days of drought stress in a high sand root zone, in which less than 3 inches (70 mm) of rainfall occurred in the entire five-month period, with most of that rainfall occurring in the first month. The five turfgrass genotypes were Ormond and NuMex Sahara bermudagrasses, Floratam and Floralawn St. Agustinegrasses, and Adalayd seashore paspalum. Certainly these are not high water users. In fact, most of the bermudagrass cultivars performed very well as water conserving landscape materials, including Ormond, NuMex Sahara, Texturf 10, Midway, Santa Ana, and Tifway.

These results show that quality landscapes involving turfgrasses can be used that sustain a high standard of water conservation. The key problem and need is to educate and motivate individuals involved in decisions concerning landscape irrigation to follow the proper watering techniques, which are actually very simple and less time consuming.

Follow Proper Turf Irrigation Practices:

The amount of supplemental irrigation water required for a given perennial turfgrass depends on: (a) the specific turfgrass species and cultivar, (b) environmental and cultural factors influencing the shoot evapotranspiration rate, (c) the water absorption capability of the root system, (d) an efficient, effective irrigation system, and (e) the proper irrigation practices.

It is best to irrigate infrequently and deeply to the extent of the root system. At any one irrigation, apply water at a rate and duration that can be accepted into the soil. Stop irrigation before standing water appears on the surface.

- Apply irrigation water at a rate that does not exceed the soil infiltration and percolation rates.
- The total amount of water applied at any one irrigation should not result in soil water saturation and waterlogging.
- Schedule diurnal irrigations when temperatures are lowest to reduce evaporative loss: this is typically at dawn.
- Schedule diurnal irrigations when winds are lowest to achieve more uniform water distribution; this is typically at dawn.

A Drought Survival Strategy for Non-Irrigated Turf:

Drought develops as a result of an extended period without precipitation, combined with the lack of an irrigation capability and a high evapotranspiration rate. The severity of soil drought is affected by the duration without rain, the evaporative power of the air, and the water retention characteristics of the soil. Droughts are most likely to occur during the midsummer period, although the actual timing of occurrence and frequency are not predictable. There are a number of options available to prepare a turf for drought stress.

- Selection of drought resistant species and cultivars.
- Optimize turfgrass drought tolerance via cultural practices.
- Maximize rainfall effectiveness via water harvesting.
- Maximize water absorption by roots.

Cultural Practices to Enhance Drought Survival of Turfs:

- Raise mowing height
- Modest nitrogen nutritional level
- Adequate potassium and iron nutritional levels
- Turf cultivation by coring or slicing to 3-4 inch (75-100 m) depth
- Control any thatch
- Maintain soil reaction near neutral

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