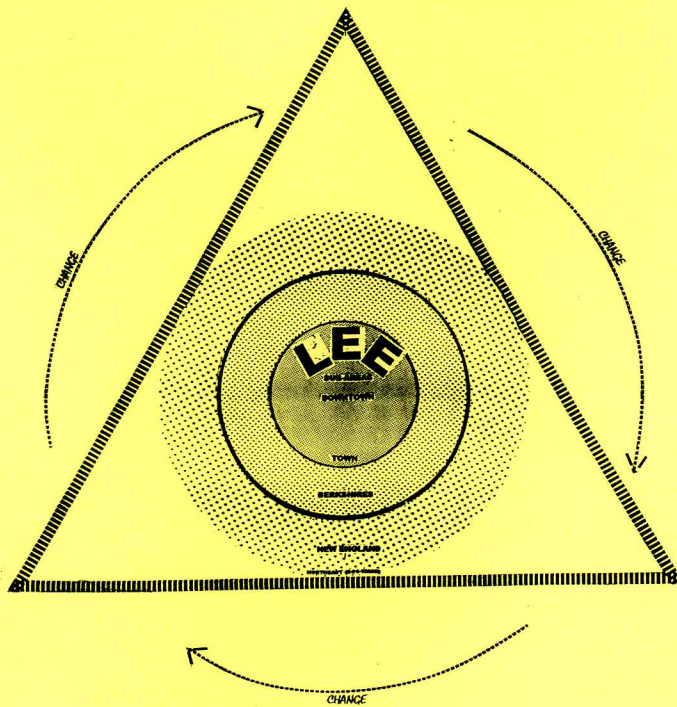


# ANALYSIS

## **NATURAL RESOURCE BASE** (Landform, Vegetation, River/ Water, Climate, Special)



# EXISTING LANDFORM

## GENERAL VALUE AND DEFINITION OF LANDFORM

Landform and geologic configuration is important to Lee in several ways: It is the supporting physical base for the natural and manmade environment that provides for human activity; It has experiential material & spatial quality-- an overall unified character and variations within-- with aesthetic properties that contribute to the essential meaning of place for residents and visitors alike. And it is a generator and determinant of past & future design ideas and construction technique. Since these valued aspects are found throughout all scales of the whole "landform continuum", it is important in this analysis to saturate our understanding of all scales of Berkshire landform to acquire insight into Lee's essence. As a prerequisite for truly valid design proposals one must appreciate how Lee is so bound up with landform's visual-spatial-structural-haptic-kinesthetic and functional character.

(Note: Landform directly entails bedrock, soil layers, mass/space configuration, grades, bearing properties and surface/permeable drainage factors. And it resultantly entails the supporting and ordering of vegetation, wildlife, roads and buildings, other structures, defined outdoor spaces, and climate modification. As appropriate to an initial study we shall summarize briefly those important aspects from a technical/functional perspective, plus give special attention to the "experiential conceptual quality" of the Berkshire landform, at different scales).

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## DESIGN OVERVIEW OF ALL LANDFORM REGARDING LEE

The following statement depicts the landform-continuum in which Lee belongs— where 'strong landform concepts occur within strong landform concepts' from regional to intimate scale: "Lee belongs to the Appalachian Highlands that define the United States eastern seaboard, such that the whole town of Lee is **immersed and absorbed in the Berkshires** (county regional area); occupying 27 square miles **within the Berkshire Housatonic Valley between the Taconic & Berkshire Hills**, and specifically **surrounded by October/Beartown & Stockbridge Mountain State Forests**; within that, Downtown Lee is nestled on a hill of **descending terraces**; with different engaged terrace configurations giving apt distinction to the different manmade landuse areas, with **detailed sub-terrace-landform occurrences therein**". (\* The above description can be condensed to a more succinct expression of the 'Lee-in-the-landform-continuum' that links landform concepts throughout seven different landscape scales of enclosure, as follows: + "Lee belongs to the Appalachian Highlands, absorbed in the Berkshires, within the Housatonic Valley between the Taconic & Berkshire Ranges, specifically surrounded by the three State Forest Hills, nestled on a descending slope of a small local hill, of different six terrace configurations, with detailed subterrace landform therein").

These statements are a shorthand packaging of the ubiquitous landscape that we wish to interpret— if somewhat arbitrarily— in ways that ultimately can contribute extra design value to the downtown Lee Revitalization proposals. (The precise interconnective causal geologic order of this landform— be it of fractal, basic/net hierachical, or other logic— is beyond the scope of this paper; but we should appreciate it with a kind of 'free spirited creative attitude', along with practical consideration of sufficient technical data that is provided herein). As verbal descriptions, they mirror importantly how landform does have 'relational meaning' for Lee at many conceptual scales, including: the national physiography ("of the Appalachian Highlands, New England Upland"); the greater region physiography ("in The Berkshires"); the town as a whole ("centered in a valley"); the downtown target area ("on a terraced hill"); and particular sub-downtown areas (six individual terrace configurations"), and idiosyncratic details within. In all, this conceptual inventory generally translates into saying that Downtown Lee is experienceable as being "prominantly perched, within many scales of enclosure (conceived vaguely as concentric rings) and an overall Berkshire absorption". In total, landform is a unifying theme in which many variations occur for the 'Lee-in-the-Berkshires' cultural/physical design object. (See the 'Academic Aesthetic Sidenote' section below regarding the design studio's further exploration of landform)).

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## BASIC FUNCTIONAL AND AESTHETIC ASSESSMENT

The attention on landform in this study, even while limited to a conceptual planning level of detail, sufficiently shows that landform has high favorability in both 'functional' & 'aesthetic' regards. (See the various scale-analysis sections elsewhere below for specific information). In summary:

\* Regarding functional-technical suitability, information favorably shows slight or no limitation for building or parking construction in candidate areas of downtown, and high feasibility for most open space type uses in downtown and greater region. (Further detail of soil survey interpretation will be necessary in later phases for determining precise site-specific design feasibility, especially near river or on lyman bankings).

\* Regarding aesthetics and formal experiential-use character, landform counts as the supreme natural asset, and is concentrated on in this analysis appropriately more so than some other categories.

\*\*\* As follows are descriptions through seven landscape scales of landform relevant to Lee (ranging from large to small area, labeled as "A-G")— that we ultimately understand integratedly as a "landform continuum". Meaning can be found, 'at', 'between', and 'throughout' these scales to inspire proposals:

**A) CONTINENTAL SCALE: "LEE IS OF THE APPALACHIAN HIGHLAND PROVINCE; SPECIFICALLY OF THE NEW ENGLAND UPLAND SUBPROVINCE)"**

(\* See 'continental structures diagram'): The eastern seaboard of the United States is a major physiographic alpine province called the APPALACHIAN HIGHLANDS, extending from central Alabama to upmost New England. It is one of two U.S. continental mountain belts— the other being the Rockies. The Appalachians are a Post-Cambrian mountain chain consisting of tightly folded thermally metamorphosed sedimentary rock, that were deformed late during the Paleozoic age of 200 million and earlier years ago. (The Rocky Mountains occupy the mid west coast, and were deformed by the American continental 'plate collision' with the Pacific plate during the later Mesozoic/early Tertiary period (50-70 million years ago). We therefore should appreciate Lee as belonging to the first of only two classic mountain-physiologies of the continent, in contrast to the platforms and shielded areas that dominate the continent's plan area. This landform determined or dramatically contributed to the broad natural and manmade pattern that exists today— of continental climate, water, vegetation, and cities towns, roadways)— megalopoli vs conservation areas.

This Appalachian province subdivides into seven subprovinces or regions, (\* see "Physiography region map 3") including as one our NEW ENGLAND UPLAND, which extends longitudinally through mid-lateral New England from most of mid/west Massachusetts to northern Maine. (New England Upland is 40,192 square miles, described officially as an unpraised plain, based on granite, gneiss, schists, slates, or shale— reliced by the glacial age; hundreds of lakes are upon it; elevations of 500-1500 ft. streams cut narrowly through; its three low areas are Lake Winnepesaukee N.H., Bangor ME., and Connecticut/Berkshire Valley (with Lee) are in Massachusetts. Note that the Green Mountain subprovince conjoins the Berkshire Valley's Westward border.

(\* See 'structural features diagram' showing how the Appalachians consist of 'high metamorphic formation' rock in Lee's general New England location; the remaining belt also includes low grade metamorphics, granite, large folds & fault thrusts). Note that scale A above actually combines two scales of province and subprovince).



**B) STATE-CONTEXTUAL SCALE: LANDFORM IN MASSACHUSETTS: "LEE IS WITHIN A GRADIENT BAND OF SEVEN LANDFORM ZONES"**

(\* See state landform map). Massachusetts in turn subdivides into seven landform zones, west to east as follows: Taconic Mountains, Berkshire (Hoosic/Housatonic) Valley, Western Highland Berkshire Hills, Connecticut Valley, Central Highlands, Coastal Hills, Boston Basin, Narragansett Basin and Coastal Lowlands. This landform gradient, with glaciated variation upon the bedrock variation, is supportive of very different vegetation, climate, wildlife, water patterns and construction technique and landuses. The BERKSHIRE COUNTY REGION for which LEE belongs, entails the western most three of the Massachusetts zones— and the most extreme physiography (and "robust nature") of the entire gradient, including: "Taconic Mountain" at the western Massachusetts/Ny Border; the "Berkshire-Hoosic Valley" between the Taconics and the Western Highland Berkshire Hills; and the "Western Highland Berkshire Hills" (which separates the Berkshire and Connecticut River valleys. From this extremely varied state land-gradient map, one can see why even people from all Massachusetts and elsewhere, though they may live relatively close, find the Berkshires so favorably unique— so desirably "another world" to escape to, as recreationally fulfilling and "romantically & spiritually closer to true nature", and as a normatively higher reality. In that regard, the landform is the underlying operative factor. (Eg. The Berkshires, from the ground up, are a completely different environment than the Cape— these in many ways are gestaltly polemic landscapes; likewise, th Berkshires are distinct from the less intimate, rugged areas of nearby upper New England). ((See Planning analysis regarding additional development factors not included here)).

C) COUNTY SCALE: LANDFORM IN THE BERKSHIRE COUNTY REGION: "LEE IS CENTERED IN THE MAIN VALLEY, ABSORBED IN LANDFORM OF 'DIVERSITY WITHIN GRAND UNITY'"

It is indeed landform that gives identity to the entire county of which Lee belongs. The region is universally known by residents and tourists, locally and internationally, firstly in terms of its landform: "THE BERKSHIRES". Lee is a landform center point in the Berkshire Valley between the Taconics and Berkshire Hills-- a point in the 'valley-hinge' of the county's triple landform division. Lee therefore is physically and psychologically "landform-absorbed and immersed" in the Berkshires, spatially felt within several layers or scale of landform enclosure (as we shall describe), among kin Berkshire towns, as a place with both 'landform diversity' and overall 'landform unity':

Regarding **diversity**, the entire Berkshire area has a strong topographic relief that is experienced throughout as stimulating in complexity, and it gives every place within the region a distinctly original natural and man-made order and appearance. This entails different arrangement of land mass, outcropping, grades, spatial enclosure, perched views, layered land/atmospheric silhouettes, (appearing differently day-nite and seasonally), drainage patterns to river, microclimate, forced road turns, contrasting or reciprocal geometry of different horizontal/vertical town layouts, and countless incidental local expressions like bulging landform pressed against retaining walls. Yet, paradoxically, throughout the Berkshire region there is always the same sense of the **larger unity** of continuous terrain which different places all belong. So, one experiences again and again the unique landform variations that give identity to each town, with yet the omnipresent feeling of an assuring connection to the Berkshires as a New England whole. The town of Lee, approached "via the Berkshires", is sensed positively in both ways, for a special character of its own as well as being part of the larger homogeneous geology-culture. This elusive dualism of local and regional senses of landform is essential to Lee's identity, and should be recognized, enhanced, strengthened in any Lee proposal. The deliberate pragmatic axial and terraced geometry of different yet similar manmade "landform-influenced" Berkshire towns, linked with a ribbon of rural roadway of persistent twists and turns, gentle rising and falling across Berkshire topography-- entails a harmonious "grandeur of intimacies" marking at once the romanticism and the stoicism of New England History-- distinct from other environments of the world. Landform is the genesis layer of this sacred order. Being in the 'heart of Berkshires', so very landform-associated with Great Barrington, Stockbridge, Lenox, validates also that Lee has a good options to either share in the spirit of healthy tourism activity if it chooses-- OR remain aptly land absorbed, enclosed and protected as a distinct town that is non-tourist oriented. In any case, landform contributes most to Lee's 'spirit of place' that designers should emerge themselves in and appreciate in its obviously profound, as well as subtle aesthetic character-- and never lose sight of as they deal with all the other (including vital pragmatic functional & non-aesthetic) issues relevant to revitalization.

(ILLUSTRATIVE NOTE FOR STUDENTS: A most subtle example regarding this Berkshire landform-given unity/diversity-- where aesthetic attributes translate to important psycho-environmental, social and (if potential) economic value-- is Stockbridge vs Lee: Both towns feel "nestled upon a terrain and hugged by surrounding landform"-- an attribute that unifies them; (moreover, both towns are absorbed in a powerful contextual regional landscape that unifies them further). Yet, they are so different: in a good way Stockbridge feels "submerged" deeply into the land and closely hugged by enclosing land and forests; while Lee in a good way instead feels "perched suspensefully", commanding an elevated prospective position, while still enclosed. Therefore, Stockbridge & Lee, concerning landform alone, are two good variations on the wonderful "nestled/enclosed" theme, in terms of dramatic experiential environmental quality. This kind of unity/diversity situation occurs throughout the Berkshire region's

towns, and similiarly with thematic rural spaces and path/roadway scenarios that unfold upon the consciousness of pedestrians/drivers. (And of course, by landform, both towns feel very different than the remaining Non-Berkshire world, as described previously: even Turners Falls and Amherst, though very nearby, are outside the Berkshires, and very much lack the ubiquitous feeling and determinant forces of such pronounced Berkshire terrain and accompanying ecosystems, roads and towns). For Lee, this is ultimately about the extra value of landform for providing a meaningful & sustaining human habitat (locally and contextually) for its residents, its neighboring communities and visitor attraction)).

#### HARD DATA ABOUT THE THREE BERKSHIRE LANDFORM-DIVISIONS:

##### 1) TACONIC MOUNTAINS---

**Physiography:** the only "mountainous" part of state; general elevations are 1200 to 2800 ft; Mt Greylock (highest peak of state) is 3491' in north east part of county. Outlying is Mt Everett 2624' and Brodie Mt (2613'). This consists of Metamorphic rock base (mostly schists and gneisses) 250-600 million years old (which originally were Paleozoic sediments of Cambrian/Ordovician ages). These are large scale compared to flat Massachusetts, but small scale compared to upper New England.

**Soil:** atop the bedrock is Glacial Till or Rough-Stoney areas (both relates to the schist/gneiss bedrock), plus organic layer of soil. The glacial-till upland areas are fair to good drainage, stony, occasional outcrops and some lowlands; swale areas have poor drainage with more organic material. Rough-Stoney category has little agricultural worth, is mostly woodland (eg spruce/hardwood). Many of those areas were once cleared, are now abandoned, riddled with crumbling walls. (Consult the numbered soil map for more specific soil categorization for this county. Steepest areas are taconic/macomber/lanesboro, described below).

##### 2) BERKSHIRE VALLEY---(general Lee Location)

**Physiography:** long and narrow lowland runs n-s, between Taconics and Berkshire Hills, contains Hoosic and Housatonic Rivers; this area was eroded down due to less resistant limestone base (precambian metamorphic 700-1000 million yrs).

**Soil:** a thinner layer of glacial till and deeper organic material layer than the flanking hills-- with great visual contrast; these soils, formed on Limestone, are less acidic than soils of schist/gneiss bedrock: Limestone's neutralizing effect quickens decay of organic matter and creates greater soil buildup. Much of this area has been cleared and farmed-- because it is flat valley & good depth. (Mostly amenia-pittsfield-farmington series soils, specifically decribed below).

##### 3) BERKSHIRE HILLS (WESTERN HIGHLANDS) --

**Physiography:** rugged top 700-2000' EL eastern section is deeply dissected by major rivers that flowing east into the Connecticut river.

**Soil:** Glacial Till and organic top layer is similar to Taconics, but generally less extreme. No large area of Rough/Stoney category exists. More specifically, predominantly turnbridge-lyman-peru series soils, specifically decribed below).

-- **Area Glacial Features:** Occasional drumlins and drumloid hills, local outwash plains (scattered and small). There are some kame terrace systems along some sides of valleys (see archtype diagram).

-- **Area Water features:** Limited lakes and ponds in Berkshire uplands; have extensive shore development.

-- **River systems:** Hoosic and Housatonic (see river analysis in this study). Very little of Housatonic river watershed is in the Berkshire uplands.



D) TOWN SCALE: LANDFORM OF THE DOWNTOWN LEE AS A WHOLE: "ON HILL OF TERRACES"

Downtown Physiography:

The particular landform supporting downtown Lee (our target area) is the natural expression of a single geologic idea: "a hill of land gently terracing to the river". Total hill area is  $3/4$  mile square. The extreme top 'East Ridge' of the hill— appropriately conserved— lies in view  $1/4$  mile east of downtown, having an elevation 1150'. It mellows westward into the subtle pattern of decending terraces supporting the built downtown, until it bottoms elevationally 200' lower at the Housatonic River (el 850); and then the west river banks rise westward, elevationally 75' higher. ((Note: \* See map. The high East Ridge aligns with and is geologically connected to the Pinnacle-Golden Hills of Lenox one mile north— where regional trails exist. The Housatonic River cuts Lee from the Pinnacle. ie The river actually bisects Lee's East Ridge and the Lenox Pinnacle at the Eagle Mill so the river flows on the west side of the East Ridge in Lee, and the east side of the Pinnacle in Lenox— clearly comprehensible as one geological system (of identical alignment, steep slope, and rocky "LtE" soil) with dynamic drainage, erosional and visual tension intact)). The built town portion of the hill enjoys proximate spatial closure from the East Ridge and west upland as well as n/s proximate peripheral landform. (See previous regional landform analysis for other landform "scales of enclosure" of the larger landscape).

\* The perceivable integrity of the built downtown as a singular, size-defined and comprehensible entity, is very much a "landform-given attribute"— corresponding to the unity of the hill terraces and bounded by the elevational extremes of the high East Ridge and the low Housatonic River and its upward west bank. Enforcing this distinct landform-place is said contrasting surrounding physiography that is visually obvious from downtown, and is visually/kinesthetically experienced by vehicles on the bending of Route 2's approach roads. Engaging the landform (i.e the horizontal/vertical floor and distant views) from the pike, to Route 2 and then within downtown, is a dialogue with landscape par excellence.

Despite the myriad of design problems discussed elsewhere in this study, the natural landform is an invaluable resource and an asset in many ways. For instance, the layout of the manmade downtown (structures, spaces and activities) seems appropriately determined by and married to the supportive landform base such that the whole, as well as each of the six component built landuse areas in themselves, are strengthened by their particular landform configuration and elevation. Each of the six areas of town has its own special landform character that encourages its man-made structural and use identity, in distinction of other areas-- yet in a complementary way that makes for overall harmony: a result of the geological form's inherent variations within harmony. The "variation within harmony" quality that is inherent in the landform is transformed to the built aspects of town in its parts and whole. In turn, the original selection of the downtown land for settling Lee (and the subsequent minimal grading necessary to expand) seems to conform perfectly to the original ideals of the manmade town. Thus, the relation between landform and the built town seems reciprocal and mutually dynamic as if landform determined the built town as much as the built town determined landform. \* It therefore seems essential that proposals recognize the "landform-given validity" of the whole pattern and inevitable sub-places of present spatial/structural landuse areas as originally intended— albeit now disrupted by the forces of the automobile



and other modern stresses to reconcile. Designers should appreciate how the design of Lee fits the addages of historically being "internally determined from the geologic ground up" and yet externally "wants to relate to the greater scales" of Berkshire land beyond. Designers are invited to extrapolate conceptual clues for downtown proposals from the entire landform continuum-- both internal and external to Lee. Landform is a perennial theme to link past and future. Successful proposals would enforce and enhance the landgiven order while solving current problems and reaching for new ideas for revitalization.

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((SIDENOTE ABOUT VALUABLE "SYNTHETIC LANDFORM SUBTLETIES": The dangers of over-analysis at the expense of synthesis beckon here-- for one need remember how all natural factors of climate, water, vegetation, as well as the manbuilt town are functionally and experientially interactive with landform-- in dramatic as well as subtle ways beyond "analytical capture". For example, regarding climate, besides the microclimatic affectations, we have environmental variations of infinite human values. For instance: That the land rises eastward with the rising sun, and descends westward with the setting sun is experientially operative at many levels within the human psyche in powerful ways-- enforced with time (see Norberg-Shultz's phenomenological values and Christopher Alexander's "Pattern Language"). And also that the sun and moon rise prolonged to clear the east hill, piercing the silhouette of the hilltop, then swing to penetrate Main Street; and that sunshine and moonlight blind the edges of leaf, and splash shadows of trees upon landform and humanity indiscriminately-- saturates Lee with an extra layer of identity, especially valueable for those who know Lee best. Incidentals of light and landform hyperelevate the environment normatively. These are just some of the many things lost in cursory analysis, and limited by depth of well intentioned synthesis that designers must persue in their proposals. Landform's value ranges deeply from the spiritual-potetic, psychological, down to the economic variables for tourism. Flushing out meanings between and beyond the lines that fit in this text are important for designers to undertand the Lee. (Such extended interpretation can be analogously done for all aspects of town)).

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#### Downtown unit soils:

Downtown Lee, consistant with the preceding regional soil analysis, has a pattern of five specific soils, corresponding to three basic locations (ie the "central downtown site", the "west of river" periphery, and the "East Ridge" periphery). In summary:

1) **CENTRAL DOWNTOWN SITE:** (located n-s between Center & West Park Streets, and e-w between High Street & the River): all soil is "PyC" Pittsfield Urban Land Complex, which is basically unrestricted (slight limitation) for most construction purposes, including buildings, sanitary, roadway, parking, recreation space. This area and dominates 2/3 of our greater target area, and encompasses the entire built downtown. It can be observed between streets, buildings, in vacant lots, under lawns etc; (good lawns are necessarily altered with topsoil). It varies 0-15%-- flat or gentle slope; Topography (the gentle hill terraces described earlier) also has historic value. This soil is well drained with moderate surface/subsoil permeability, rapid substratum permeability; high available water capacity. It also suits most type plants, except wet types; northern red oak is the most productive plant for this soil. ((Surface is 9" very friable dark grey brown loam; Subsoil total is 23", including 6" dark yellow-brown very friable loam; to 10" brown very friable fine sandy loam,