(THIRD submission to the DCP)

September 9, 2021

TO: CITY PLANNING COMMISSION

RE: CASE NUMBER: DIR-2018-6634-TOC
CEQA: ENV-2018-6635-CE
ADDRESS: 1251-1259 West Sunset Blvd. Los Angeles, CA 90026

APPELLANTS:

Richard Courtney (abutting property owner on north east side), an individual
1001 Everett St.
Los Angeles, CA 90026

JUSTIFICATION/REASON FOR APPEALING DIRECTOR'S DETERMINATION dated August 26, 2021

Last Day to File an Appeal: September 10, 2021

INTRODUCTION

This document serves as the justification of this appeal filed in response to the Department of City Planning's (DCP) Letter of Determination (LOD), wherein Senior City Planner Heather Bleemers and Planning Assistant Stephanie Escobar improperly granted a Categorical Exemption (CE) and erroneously approved a Transit Oriented Communities (TOC) project located at 1251-1259 W. Sunset Blvd., also known to the community as the existing Stires Staircase Bungalow Court (Stires).

Page 16 of the LOD states:

> "*Pursuant to LAMC Section 12.22-A,25(f), only abutting property owners and tenants can appeal the Transit Oriented Communities Affordable Housing Incentive Program portion of this determination.*"

LAMC Section 12-22-A,25 states:
"Affordable Housing Incentives - Density Bonus."

LAMC Section 12-22-A,25(f) states:
"(f) Menu of Incentives. Housing Development Projects that meet the qualifications of Paragraph (e) of this subdivision may request one or more of the following Incentives, as applicable:..."

No code section was located within LAMC section 12.22-A,25(f) wherein it explicitly indicates the filing of an appeal is limited to abutting property owners and tenants, as the LOD suggests. I attempted to file this appeal as a representative of The Silver Lake Heritage Trust (SLHT) due to the LOD's lack of legal authority cited that indicates members of the public were prohibited from filing an appeal, however the Department of City Planning would not accept the appeal with SLHT listed as my co-appellant.

Any and all links to webpages in this document are considered part of this appeal. All content that exists at the link destination are to be included in this appeal.

The DCP failed to review the requirements and considerations *prior* to rubber stamping this project with a Categorical Exemption. Whereas CEQA Statute & Guidelines section **15061.** states**:**

> "(a) Once a lead agency has determined that an activity is a project subject to CEQA, a lead agency shall determine whether the project is exempt from CEQA.
>
> (b) A project is exempt from CEQA if:
>
> (1) The project is exempt by statute (see, e.g. Article 18, commencing with Section 15260).
>
> (2) The project is exempt pursuant to a categorical exemption (see Article 19, commencing with Section 15300) and the application of that categorical exemption is not barred by one of the exceptions set forth in Section 15300.2.
>
> **(3) The activity is covered by the common sense exemption that <u>CEQA applies only to projects which have the potential for causing a significant effect on the environment</u>. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA."**

The DCP erred in its discretion by granting a Categorical Exemption when impacts to the environment and public safety would be catastrophic and unmitigable, compromising the health and safety of the public as described in this appeal. As such, the proposal must be denied.

<u>THE PROPOSED PROJECT DOES NOT QUALIFY FOR BENEFITS UNDER A TOC AND IS IN CONFLICT WITH THE INTENTION OF TOC AND THE CITY'S OWN GENERAL PLAN</u>

Los Angeles Municipal Code Section 12.22(A)(25) states:

> **"(a) Purpose.** The purpose of this subdivision is to establish procedures for implementing State Density Bonus requirements, as set forth in California Government Code Sections 65915-65918, and to increase the production of affordable housing, consistent with City policies."

As seen above, the language of LAMC 12.22(A)(25) clearly states that the purpose of its section (Affordable Housing Incentives - Density Bonus) is to "**<u>to *increase* the production of affordable housing</u>**, consistent with City policies". Yet when doing the math, we see it is a fact that the proposed project REDUCES and **REMOVES** EXISTING LOW INCOME HOUSING, against City policies.

LAMC 12.22(A)(25) has no further explanation in its code section. Aside from its intention to establish procedures related to State Density Bonus requirements, its only remaining purpose as stated is to **"<u>*increase* the production of affordable housing"</u>. <u>The proposed project fails to do that.</u>** There exists no justification to approve this project when it so blatantly fails to meet the purpose of the code section it relies on for approval. On its face, this project does not comply with LAMC 12.22(A)(25) and should have been denied.

Today, and as has been for more than 99 years, the Stires site consists of **TEN** low income rental units and has been under the Rent Stabilization Ordinance since its inception. A total of **TEN** homes has accommodated ten separate individuals and/or families. Each tenant was or is paying approximately **$878.00** a month. Seven of the bungalows have been empty for more than a year due to the tenants being evicted via the Ellis Act. There are currently three tenant occupied bungalows. **This information is critical as the applicant has failed to include any information in his application paperwork showing there are rent paying tenants living in their bungalows.**

As seen here, the City once again approves a project that evicts long-time tenants in order to allow developers to build excessive and unnecessary luxury housing while putting on paper their sworn statement to throw in a few "low income" units, when there is no enforcement in place to ensure these units go to low income families, or that the low income units are even completed in the final project. There is no mechanism in place to keep track of how or to whom an affordable unit is assigned. In fact, buried in Measure JJJ (the measure responsible for the implementation of the TOC through the City's own interpretation), there is a clause which allows the applicant **to opt out of his affordable unit obligation by paying the City "in lieu fee"** if he finds the project will not pencil out with anticipated profit margins. It is an indisputable fact that this proposal **REMOVES existing affordable housing, forcing more individuals out of their homes, while the City simultaneously exacerbates their self-perpetuating homeless problem.**

LAMC 12.22(A)(31)(b)(2)(i) states:

> "An Eligible Housing Development shall be granted increased residential density at rates that shall meet or exceed a 35% increase."

LAMC 12.22(c)(1) clearly states:

> "A Housing Development Project that includes 10% of the total units of the project for Low Income households or 5% of the total units of the project for Very Low Income households, either in rental units or for sale units, shall be granted a minimum Density Bonus of 20%, which may be applied to any part of the Housing Development Project.
> The bonus may be increased according to the percentage of affordable housing units provided, as follows, but shall not exceed 35%."

The proposed seeks and was incorrectly granted a 50% density bonus increase, whereas the code specifies the bonus shall not exceed 35%. Furthermore, the proposal does not include 10% of the total units for Low Income Households. Either way, the proposed project has already failed to qualify as a TOC by failing to INCREASE the City's affordable housing stock, per its requirement to do so.

State law requires ordinances to conform to the City's General Plan. A General Plan must set out a statement of the City's development policies and objectives, and include specific elements among which are land use and circulation elements. (§ 65302,subds. (a) & (b).) ." Once the city has adopted a General

Plan, all zoning ordinances must be consistent with that plan compatible with the objectives, policies, and to be consistent must be general land uses, **and programs** specified in such a plan " (§ 65860, subd. (a) (ii).) (LESHER COMMUNICATIONS, IN v. CITY OF WALNUT CREEK). The proposal fails to do this.

The DCP has abused its discretion by approving a density bonus of 50% which is fifteen percent more than what the TOC permits, if this project were to qualify for TOC benefits in the first place, which it does not.

The City's Housing Element of its General Plan states:

> "Encourage and **incentivize the preservation of affordable housing**, including non-subsidized affordable units, **to ensure that demolitions and conversions do not result in the net loss of the City's stock of decent, safe, healthy or affordable housing.**" (HOUSING ELEMENT Appendix 5.1 OBJECTIVE 1.2.2)

The proposal guarantees a net loss in the City's stock of decent, safe and healthy affordable housing and conflicts with the City's housing element in its own general plan. The housing element of the City's General Plan **promotes the preservation** of affordable housing, and specifically advises ***against*** demolition. The DCP has abused its discretion by approving this project by way of the TOC against the entire purpose and intention of the TOC, in that it permanently removes ten existing and affordable, rent stabilized housing units. As such, the proposal must be denied.

THE LOD IS INCONSISTENT

The LOD on page 1, claims: *"six (6) units are reserved for Extremely Low Income (ELI) Household occupancy (page 1 of LOD)".*

The LOD on page 3 claims to replace "*a total of seven (7) dwelling units including: four (4) units restricted to Extremely Low Income Households; two (2) units restricted for* ***Very Income*** *Households, and one (1) unit restricted to low Income Households, for sale or rental as determined to be affordable to such households..*"

"Very Income" households is not quantifiable. The DCP erred in granting approvals to a project with no clear and specific knowledge of what type of units are intended to be built. This is in contradiction with itself and omits material information including details related to the Area Median Income (AMI) assigned to the evasive "affordable" units.

The applicant's Environmental Assessment Form ("EAF") states: *"8% (6 Units) will be set aside for extermely* [sic] *low income.*"

The DCP's application submitted by the applicant states: "*Setting aside 9% (6 unit s) for Very low income." It further states it will add: "40 Residential Units, 6 Affordable Units, 64 Market Rate Units.*"

Below that, it states: "*Tier 1- TOC, FAR and Height , for construction, use and maintenance of a 70 Unit apartment building with a total of 55,000 Sq. Ft. , Setting aside 8% (6 unit s) for Very low income.*" Even with its conflicting numbers and omissions, it is this application the DCP has relied on to approve this

project as a TOC, for which it does not qualify. Furthermore, the DCP has assigned a Tier of incentives to this project without knowing what type or how many "affordable" units it alleges to build.

INCORRECT DETERMINATION OF CATEGORICAL EXEMPTION

The Department incorrectly states the project is: "*exempt from the California Environmental Quality Act (CEQA) pursuant to CEQA Guidelines, Section 15332, Article 19 (Class 32), and there is no substantial evidence demonstrating that an exception to a categorical exemption pursuant to CEQA Guidelines, Section 15300.2 applies*:"

The DCP failed to review the below conditions prior to the erroneous granting of the exemption.

15061. REVIEW FOR EXEMPTION

(a) Once a lead agency has determined that an activity is a project subject to CEQA, a lead agency shall determine whether the project is exempt from CEQA.

(b) A project is exempt from CEQA if:

(1) The project is exempt by statute (see, e.g. Article 18, commencing with Section 15260).

(2) The project is exempt pursuant to a categorical exemption (see Article 19, commencing with Section 15300) and the application of that categorical exemption is not barred by one of the exceptions set forth in Section 15300.2.

(3) The activity is covered by the common sense exemption that CEQA applies only to projects which have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA.

(4) The project will be rejected or disapproved by a public agency. (See Section 15270(b)).

(5) The project is exempt pursuant to the provisions of Article 12.5 of this Chapter.

(c) Each public agency should include in its implementing procedures a listing of the projects often handled by the agency that the agency has determined to be exempt. This listing should be used in preliminary review.

(d) After determining that a project is exempt, the agency may prepare a Notice of Exemption as provided in Section 15062. Although the notice may be kept with the project application at this time, the notice shall not be filed with the Office of Planning and Research or the county clerk until the project has been approved.

(e) When a non-elected official or decisionmaking body of a local lead agency decides that a project is exempt from CEQA, and the public agency approves or determines to carry out the project, the decision that the project is exempt may be appealed to the local lead agency's elected decisionmaking body, if one exists. A local lead agency may establish procedures governing such appeals.

15063. INITIAL STUDY

(a) Following preliminary review, the Lead Agency shall conduct an Initial Study **to determine if the project may have a significant effect on the environment.** If the Lead Agency can determine that an EIR will clearly be required for the project, an Initial Study is not required but may still be desirable.

CEQA EXEMPTIONS: 15332. IN-FILL DEVELOPMENT PROJECTS

Class 32 consists of projects characterized as **in-fill** development meeting the conditions described in this section.

(a) The project is consistent with the applicable general plan designation and all applicable general plan policies as well as with applicable zoning designation and regulations.

(b) The proposed development occurs within city limits on a project site of no more than five acres substantially surrounded by urban uses.

(c) The project site has no value as habitat for endangered, rare or threatened species.

(d) Approval of the project would not result in any significant effects relating to traffic, noise, air quality, or water quality.

(e) The site can be adequately served by all required utilities and public services.

The DCP defines "in-fill development" as: "*Development of vacant or underutilized land within urbanized areas.*"

Yet the proposed site is not vacant nor is it underutilized. To the contrary, this is a well established, diverse and thriving community with longstanding ties to the immediate neighborhood. "Infill-development" is further defined as being more "***than the piecemeal development of individual lots****. Instead, a successful infill development program should focus on the job of crafting complete, well-functioning neighborhoods".* This project seeks to destroy the well-functioning neighborhood that already exists.

RELEVANT NEIGHBORING PROPERTIES

Approximately 60 feet north of the Stires property at 1185-1247 ½ W. Sunset Blvd. and 917 N. Everett St., a previous proposal never received final approvals after the developers (Aragon) produced a subsurface investigation and geological studies report as required by the City. According to the proposal's 2014 Staff Report, the Stires site is recognized as "the adjoining property" and co-exists in a Methane Zone and hillside area. The investigations produced evidence proving consequential unmitigable issues concerning public safety. A true and correct copy of the August 6, 2014 DCP Staff Report related to the Stires staircase neighboring property at 1185-1247 ½ W. Sunset Blvd. and 917 N. Everett St. is attached hereto as EXHIBIT A. **Due to concerns over public safety due to seismic instability, that project was shut down**.

This alone should have triggered a full environmental review for the current proposal, including but not limited to similar safety regulations and requirements brought forth in the 2014 report. These include slope stability, seismic issues, groundwater dewatering measures, a methane assessment and ventilation plan, an asbestos-containing operation and maintenance plan, and the abatement plan for any other existing hazardous construction materials. If it was a reasonable requirement for Aragon to perform environmental and geological studies for the Stires properties next door, the same common sense requirements apply here when the health and safety of the public is at risk.

The applicant signed, under penalty of perjury, that he has "submitted the written justifications identified in the Specialized Instructions, and any supporting documents and/or technical studies to support your position that the proposed project is eligible for the Class 32 Exemption, and the project does not fall under any of the exceptions pursuant to CEQA Section 15300.2". Yet the 2014 report that was performed on the adjoining properties at 1185-1247 ½ W. Sunset Blvd. was not submitted or mentioned anywhere in the application. The applicant's Environmental Assessment Form (EAF) says its project intends to grade an estimated **19,885 cubic yards of dirt**. The applicant alleges "NO" Hazardous Materials and Substances exist on the land and no contamination exists. Yet both the DCP and the applicant fail to mention that this project is in a Methane Zone and riddled with a documented history of environmental and seismic issues. Had the Department conducted an initial study, they would have learned of the dangers and threat to public safety, such as: methane, seismic concerns, slope instability and toxic substances released by the removal of almost 20,000 cubic yards of dirt. The altering of our City's topography does not go without consequences and should have been more closely examined by the DCP. The applicant's EAF form indicates the applicant submitted documents and/or technical studies to support his position that the proposed Project is eligible for the Class 32 Exemption and the project does not fall under any of the Exceptions pursuant to CEQA Section 15300.2. **However, the appellant was unable to locate any supportive documentation and the DCP has not provided them.**

In a new geology and soils report dated September 8, 2021 and attached hereto as EXHIBIT B, Principal Geologist Ken Wilson concludes: "Our review indicates several technical issues that we feel should be considered and addressed prior to approval of the project as it is currently defined. In particular, the Methane Zone hazards, potential fault locations/activity levels and bedrock slope stability due to the proposed slope angles, the dip angles of existing bedrock bedding, assumed material strengths, presence of fractures, up slope groundwater/seepage, and orientation/height of the proposed permanent and temporary slopes.

The Categorical Exemption granted is inappropriate due to the evidence of seismic instability stemming from the Lamar and/or Earth Consultants (ECI) fault lines. The proximity of the ECI fault line is especially troubling. According to the new geology report (EXHIBIT B), this is the same fault line which resulted in **the demolition of two new buildings** in December 2004 at the Roybal Belmont High School site, less than a mile to the southwest, due to potential seismic danger.

Additionally, the failure to consider the cumulative impacts in those situations where there are multiple projects, especially in residential hillside areas, such as this one that are being approved and built within close proximity, must be taken under consideration. Right now, there is massive grading and preparation for a 50 unit project on the three parcels immediately to the north of my home. There are two new projects being completed to my south. There is another project slated for Sunset Blvd. below me, a couple parcels to the north. If this project is approved, I am an island surrounded on three sides of my property by massive ongoing construction projects. The City's practice of ignoring the issue of cumulative impacts is irresponsible and unjust to the population who endure the compounded environmental impacts where these multiple projects occur.

As the owner of the abutting property, my property is significantly impacted by the grading and vibrations caused by this project. There is a proven instability of the slope on every side of my hillside property. Furthermore, my property is designated as one of the City's historic cultural monuments. This proposal puts my entire property, my safety and my property's historical status at risk. The DCP erred by putting this project's approval in higher regard than public safety.

The DCP has ostensibly approved this project on the basis of a TOC, and the site is supposedly being designed for transit-dependent living. This should negate any need for the massive excavation of dirt and disruption of the local hillside topography to create two entire underground floors dedicated only to parking cars.

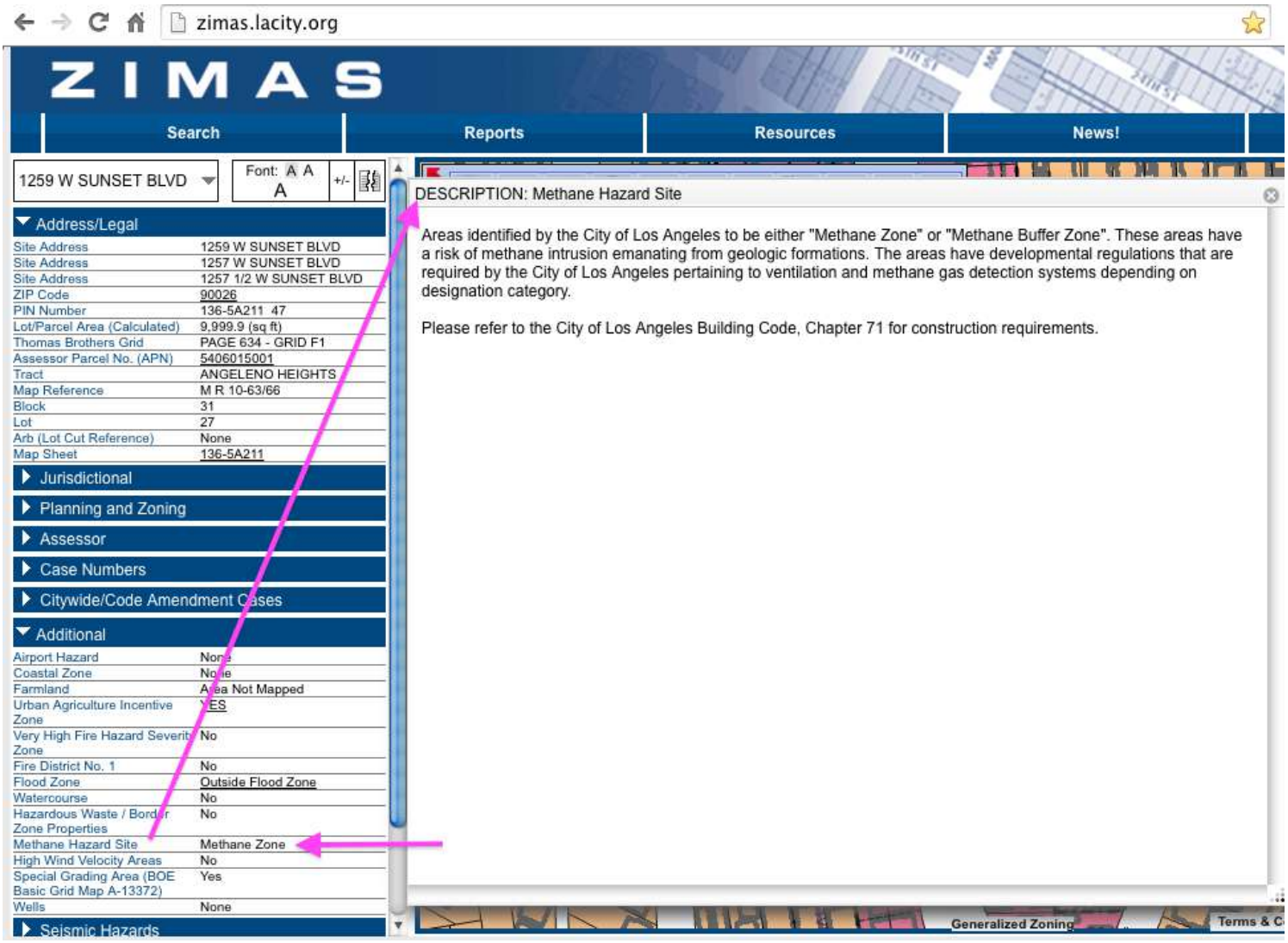
The proposal fails to qualify for a Categorical Exemption as required in section *15332(c)*. There is no evidence in the record showing "*the site has no value as habitat for endangered, rare or threatened species*". The record is silent as to any objective study regarding the wildlife in this area, particularly the presence of birds and how this project would violate the Migratory Bird Treaty Act, as the proposal threatens to remove approximately 16 mature trees that provide habitat to local and migratory wildlife and additional benefits to the community that have been established for decades. Please see the attached study included herein and referenced as EXHIBIT C: The Human Footprint and the Last of the Wild which provides the evidence to support "...**the higher the density and the smaller the park, the higher the extinction rate.**" (page 2 ¶ 8). Please also see EXHIBIT D: The Large Tree Argument, which provides the evidence to support existing trees, such as the 16 trees at Stires, to provide energy conservation, clean air, clean water, attractive surroundings which provide emotional and mental benefits, and enhanced real estate values. A developer's promise to plant new trees **fails to justify** cutting down mature, established trees which provide countless benefits to the community.

The DCP approving the destruction of 80 year old trees is an unconscionable incentive. Considering the net carbon increase this proposal will impose on the community with the addition of 64 dwelling units and up to 128 additional vehicles, the applicant insists on removing the very resource we need to reduce the additional carbon footprint he is imposing. These 16 trees serve as habitat to this environment and are heavily relied on; their removal constitutes a significant negative impact. The proposal fails to comply with section 15332(d) by alleging it *"would not result in any significant effects relating to traffic, noise, air quality, or water quality."*

The Air Quality study in the case file (finally obtained after several requests), was conducted for this project by a company hired by the developer who has an interest in the outcome of his report. There is no evidence in the record proving the demolition alone of the ten 99-year-old homes does not impact air quality. This is an air quality issue even before the topography of this hillside is interrupted and destroyed by the removal of 19,885 cubic yards of earth, and underground particles are released into the environment. Considering the site is a Methane Hazard Site (the Director's Determination is **silent** on this fact), the applicant is required to obtain an Authority to Construct from a local Air Pollution Control District (APCD) or Air Quality Management District (AQMD) due to the air pollutants (including but not

limited to PM (re-entrained road dust), asbestos, diesel PM, NOx, CO, SOx, PM10, VOCs that **will be** emitted into the community and environment for no other reason than the project. The City describes a Methane Zone as:
"..areas **have a risk** of methane intrusion emanating from geologic formations. The areas have developmental regulations that are required by the City of Los Angeles pertaining to ventilation and methane gas detection systems depending on designation category."

Please see this screenshot taken from Zimas.lacity.org below:



Two brand new buildings at the future Edward R. Roybal Learning Center (originally the Belmont Learning Complex project), approximately 0.8 of a mile from Stires, had to be demolished in December of 2004. These buildings were built atop an earthquake fault on the 35-acre site (formerly known as the Los Angeles Oil Field) which is plagued with toxic hazards such as methane gas and hydrogen sulfide. Please see the information provided at the two links below:

https://www.fulldisclosure.net/series/lausds-238-million-belmont-demolished/
https://www.latimes.com/local/la-me-belmont10-2008aug10-story.html

The concerns at Belmont/Roybal and other campuses built over oil fields or polluted ground ultimately led to independent oversight of environmental issues through the State's Department of Toxic Substances Control.

The Department failed to consider these risks and how we and the public would be impacted. The proposal is not exempt from CEQA as alleged by the DCP. By approving this project in such an irresponsible manner, the DCP has shirked its duty to protect the people by neglecting the safety, health and well-being of the citizens who are the bearers of the brunt of these impacts.

The DCP is unable to see with certainty that there is no possibility that the activity related to this project may have a significant effect on the environment. Therefore, this project is indisputably subject to CEQA.

DESTRUCTION OF A HISTORIC RESOURCE

The approval of this destructive project will also result in the demolition of the Stires Staircase Bungalow Court, a historical resource which was approved and recommended by the Cultural Heritage Commission on **ALL THREE AVAILABLE CRITERIA** of the Cultural Heritage Ordinance on August 6, 2020. Please see the below link of the HCM packet for Stires:

STIRES STAIRCASE BUNGALOW COURT 1251-1259 West Sunset Boulevard CHC-2020-896-HCM ENV-2020-897-CE Agenda packet includes: 1. Fi

The Cultural Heritage Commission are the City's appointed experts in the field of historic analysis, identification and preservation. **In a rare move**, they voted against the negative Staff Recommendation from the Office of Historic Resources and approved designation of this site on the merits of **all three criteria**: its bungalow court architectural style, its relationship to the cultural and commercial identity of the community with the advent of the local streetcar line, and the connection to one of Southern California's earliest female banking executives, Lilly Bennett Baldwin Howard, who owned these bungalows as part of her estate from 1934 until 1950. Stires has proven to be a one of a kind invaluable historic resource and is eligible for state recognition through the California National Register. **Note: It is incredibly rare that a potentially historic resource is found to meet all three of the criteria set forth by the Cultural Heritage Ordinance.** This trifecta determination of historic importance from the Cultural Heritage Commission cannot be discounted. Attached hereto as EXHIBIT E is a true and correct copy of the Cultural Heritage Commission's recommendation letter to PLUM, stating: "The Stires Staircase Bungalow Court meets all three of the Historic-Cultural Monument criteria".

CITY CHARTER CODE CONFLICTS WITH TOC "GUIDELINES"

The TOC cannot be approved because it is inconsistent with the development standards ***as laid out in the Charter Code***. The TOC "Guidelines are **subject** to the Charter; they do not **supplant** the Charter. The TOC "Guidelines" recommended by the City Planning Commission were **not approved by the City Council**, and no application was filed to invoke the mandates of the City Charter.

The City Charter code Sec. 556. General Plan Compliance controls compliance with the City's General Plan. The TOC "Guidelines" never went before members of the City Council - the only legislative body having authority to adopt a recommendation made by the City Planning Commission.
City Charter code Sec. 558. Procedure for Adoption, Amendment or Repeal of Certain Ordinances, Orders and Resolutions.

Measure JJJ does not amend either Charter Section 555 or LAMC Section 11.5.6. To effectuate a change to the general amendment protocol would have required a Charter Amendment and an amendment to LAMC Section 11.5.6.

City Charter Code Section 551. City Planning Commission states:

> "The Board of Commissioners of the City Planning Department shall be known as the City Planning Commission and shall consist of nine members. It shall:
> (a) give advice and make recommendations to the Mayor, Council, Director of Planning, municipal departments and agencies with respect to City planning and related activities and legislation;
> (b) make recommendations concerning amendment of the General Plan and proposed zoning ordinances in accordance with Sections 555 and 558;
> (c) make reports and recommendations to the Council and to other governmental officers or agencies as may be necessary to implement and secure compliance with the General Plan; and
> (d) perform other functions prescribed by the Charter or ordinance."

City Charter Code Section 558.(b)(2) Procedure for Adoption, Amendment or Repeal of Certain Ordinances, Orders and Resolutions states:

> "(2) Recommendation of the City Planning Commission. After initiation, the proposed ordinance, order or resolution shall be referred to the City Planning Commission for its report and recommendation regarding the relation of the proposed ordinance, order or resolution to the General Plan and, in the case of proposed zoning regulations, whether adoption of the proposed ordinance, order or resolution will be in conformity with public necessity, convenience, general welfare and good zoning practice. The City Planning Commission shall act within the time specified by ordinance. After the City Planning Commission has made its report and recommendation, or after the time for it to act has expired, the Council may consider the matter. Failure to act within the time prescribed by ordinance shall be deemed to be a recommendation of approval by the City Planning Commission of the proposed ordinance, order or resolution.
> (3) Action by the Council. Before adopting a proposed ordinance, order or resolution, the Council shall make the findings required in subsection(b)(2) of this section.
> (A) Planning Commission Recommendation of Approval. If the City Planning Commission recommends approval of the proposed ordinance, order or resolution, the Council may adopt an ordinance, order or resolution conforming to the Commission recommendation by majority vote."

The site location is on Special Grading Area (BOE Basic Grid Map A-13372) as seen in EXHIBIT F which is a true and correct copy of a screenshot taken from ZIMAS.lacity.org. Hillside grading areas require soils and geology reports in order to ensure public safety. The DCP's approval of the proposed by going through the medium of a TOC circumvents this requirement, avoiding the Department's responsibility to consider public safety prior to approving a project.

Should the applicant have gone through the normal channels to seek the incentives which the DCP incorrectly approved, the City Charter Code section 562. would require:
"*conditions that will remedy a disparity of privileges and that are* ***necessary to protect the public health, safety or welfare and assure compliance with the objectives of the General Plan and the purpose and intent*** *of the zoning ordinance. A variance shall not be used to grant a special privilege or to permit a use substantially inconsistent with the limitations upon other properties in the same zone and vicinity. The Zoning Administrator may deny a variance if the conditions creating the need for the variance were self-imposed."*

Charter §555, and its implementing ordinance, LAMC §11.5.6 (general plan) and LAMC §11.5.7 (as to specific plans) control the process and protocol attendant to *general plan amendments*. Charter Section §558 and its implementing ordinance LAMC §12.32 control the protocol attendant to the effectuation of *zone changes*.

The TOC "Guidelines" are inconsistent with the Charter; it is void ab initio. *Lesher Communications vs. the City of Walnut* (1990) 52 Cal. 3d 531 (voter passed initiative ordinance effectuating de facto zoning changes which otherwise conflict with a City's general plan is void *ab initio*). By application of the same logic, any ordinance which conflicts with the City's charter is void *ab initio*. The TOC "Guidelines" conflict with the City Charter because, as applied to this project, it creates changes to the City's zoning law and zoning development standards which are inconsistent with the Charter.

The DCP proceeds as if the TOC "Guidelines" are to be implemented in the same manner as if they were a council-approved ordinance (which they are not). It even falsely lists the "Guidelines" as an ordinance on its webpage. Unlike the lawful ordinances in this list, which all have an implementing ordinance number, **the TOC Guidelines have no implementing ordinance number**.

The City Council never approved a TOC implementation ordinance, as required by state law (California Govt. Code Section 65915(d)(C)(3). Legislative approval under the City Charter requires the Council's action. The Planning Commission is only an advisory body under Charter Section 551. Only the City Council can grant legislative approval. It has not yet granted implementation authority for TOC. In the absence of an implementation ordinance, TOC approvals are ultra vires.

CONCLUSION

The City refers to its General Plan as its "*blueprint for the future, prescribing policy goals and objectives to shape and guide the physical development of the City"*. The City's health plan, titled "Plan for a Healthy Los Angeles" chapter one is titled "*Los Angeles, a Leader in Health and Equity", stating: "where a person lives often determines their health destiny"*. Yet as seen here, the lead agency for the City of Los

Angeles charged with the responsibility for land use approvals, **neglects to mention this proposal's dangerous ramifications and how they affect the citizens of this City. The DCP cannot grant approvals when there is an adverse impact to public health and safety.** Appellants are aggrieved by the DCP's careless and reckless decision to approve such a dangerous and harmful project.

Additionally, the City Planning Commission needs to be made aware of the many requests that were made by members of the public seeking to review the files related to this case. The DCP ignored many of these requests and neglected to provide access to case files. Appellants find this an abuse of authority and an obstruction of the public's right to participate.

As of the time of the filing of this appeal there has been no posting of the Categorical Exemption filed with the county (according to the filings posted here: https://apps.lavote.net/CEQA). Therefore, the statute of limitations has not yet begun. Appellants and other aggrieved parties having standing to bring a legal action against the City of Los Angeles and Real Parties in Interest, reserve our rights to seek judicial intervention after exhausting our administrative remedies.

Sincerely,

EXHIBIT A

VESTING TENTATIVE TRACT MAP NO. 72553-CN (stamped map-dated October 22, 2013)

HEARING DATE: August 6, 2014

PLANNING DEPARTMENT STAFF REPORT

PURSUANT TO ORDINANCE NO. 164,845, IF A CERTIFICATE OF POSTING HAS NOT BEEN SUBMITTED BEFORE THE DATE OF THE PUBLIC HEARING, IT MUST BE PRESENTED AT THE HEARING, OR THE CASE MUST BE CONTINUED.

REQUEST

Pursuant to the Los Angeles Municipal Code Sections 17.15, Vesting Tentative Tract Map No. 72553-CN to permit the merger of 16 lots for the subdivision and construction of 214 residential units and 8,406 square feet of commercial space, located in two separate buildings, providing a total of 300 vehicular and 243 bicycle parking spaces on a net 115,734 square-foot (2.657 acre) site in the C2-VL Zone. The project site is located at 1185 – 1247 ½ W. Sunset Boulevard and 917 N. Everett Street.

Pursuant to Section 21082.1(c)(3) of the California Public resources Code, adopt the Mitigated Negative Declaration (MND) for the above referenced project.

RELEVANT CASES

ON-SITE:

Case No. CPC-2013-3319-DB-SPR: This is a concurrent City Planning Commission request, pursuant to LAMC Section 12.22-A,25(c). By reserving 7% (or 15 units) of its proposed 214 units for very low income households, the project is eligible for a 25% density bonus increase and, thereby, the on-menu incentive for a 25 percent increase in the permitted floor area ratio. The project will utilize parking option one to allow two parking spaces for each unit with 2 to 3 bedrooms and one parking space for each unit with 0 to 1 bedrooms. In addition, the applicant is seeking approval of the three following off-menu incentives or waivers:

1. A 15-foot height increase to permit a maximum overall height of 72 feet as measured from the lowest natural grade to the highest point of the roof structure and to permit a 21-foot height increase from the maximum plumbline height of 45 feet for Building A;

2. A 4-foot height increase to permit a maximum overall height of 61 feet as measured from the lowest natural grade to the highest point of the roof structure and to permit a 14-foot height increase from the maximum plumbline height of 45 feet for Building B; and

3. To permit a five-story mixed-use building in lieu of three stories for Building A.

The property is located in the Silver Lake – Echo Park – Elysian Valley Community Plan, approximately ½ mile north of Downtown Los Angeles, and located in the Echo Park neighborhood of the community plan. The area is made up of primarily residential land uses (42 percent), divided as single-family residential use (14 percent) and multiple-family use (28 percent).

The subject site is zoned C2-VL and has a General Commercial land use designation. The 1VL – Height District, which for a C zone, allows up to 45 feet, 3 stories for commercial uses (unrestricted number of stories for residential use) and a floor area ratio of 1.5:1. The site is a within methane zone, a hillside area, and the East Los Angeles State Enterprise Zone, which permits a reduction in required commercial parking of 2 spaces per 1,000 square feet.

Due to the age of the on-site structures, a historical assessment was done as a part of the project's expanded initial study to determine if they were eligible for historic designation. Upon completion of the study, properties were found to be ineligible for listing at the national, state, or local levels because their lacking in historical significance, architectural distinction, and/or physical integrity. No designated or surveyed historical landmarks, monuments, or resources exist on the project site. The project site is not within a City Historic Preservation Overlay Zone, and no historical resource district exists to which any of existing buildings on-site contribute.

A mix of residential uses, including single-family and low-density multiple-family residential structures, makes up the general character of the surrounding neighborhood In relation subject property, Northerly, the adjoining property is zoned C2-1VI and improved with a 10 unit development, containing 10 individual structures that are accessed from a shared staircase; Southerly, across Everett Street, the adjoining property is zoned C2-1VL and improved with an auto repair establishment; Easterly, the adjoining properties are zoned [Q]R3-1VL and improved with single- and multiple-family residential buildings that front along Everett Street; and Westerly, across Sunset Boulevard, the adjoining properties are zoned C2-1VL and are improved with community commercial and multiple-family uses. Everett Park is located within 500 feet northeast of the project site.

Under the existing C2-1VL Zone, which is consistent with the site's General Commercial land use designation in the Silver Lake – Echo Park – Elysian Valley Community Plan, the subject property could be developed with a maximum of 263 apartment units, based on a project area of 105,524 square feet and the permitted density of one dwelling unit per 400 square feet.

The applicant is requesting to permit the merger of 16 lots for the subdivision and construction, use, and maintenance of two multiple-family residential buildings, one live/work (Building A) and one mixed use (Building B), containing a total of 214 residential condominiums, 5 commercial condominiums, and a total of 300 parking spaces. Building A is located along Sunset Boulevard and Building B is located at the corner of Sunset Boulevard and Everett Street. Building A will contain 167 live/work units and 2 ½ levels of parking. Building B will contain 47 residential and 5 commercial condominiums, with 1 level of parking. The entire development will contain a fitness room, community room, and lunge. The development will also have two roof terraces and a 5,988 square-foot

conditions stated in the memo dated December 19, 2013. See recommended conditions in **Draft Tentative Tract Report with Conditions** under department.

BUREAU OF STREET LIGHTING: No comments were available at the writing of the staff report.

ENVIRONMENTAL CLEARANCE

The Department of City Planning issued Mitigated Negative Declaration No. ENV-2013-3320-MND on July 30, 2014. See **Draft Tentative Tract Report with Conditions.**

TENANTS

The subdivider has not provided a list of any tenants.

STAFF RECOMMENDATIONS

The Planning Department staff recommends approval of Vesting Tentative Tract Map No. 72553-CN, subject to the standard conditions and the additional conditions in the **Draft Tentative Tract Report with Conditions.**

Prepared by:

Jenna Monterrosa
City Planning Associate
(213) 978-1377

Note: Recommendation does not constitute a decision. Changes may be made by the Advisory Agency at the time of the public hearing.

Code, including planting fast-growing annual and perennial grasses in areas where construction is not immediately planned.

CM-12. Geological Investigation and Engineering Requirements

(a) The design of the structure shall consider groundwater at a depth of 8 feet below the ground surface as measured at the sidewalk elevation.

(b) The existing fill soils, in addition to the upper two feet of alluvial soils shall be removed and recompacted.

(c) The proposed structure shall be supported on conventional foundations where the rock is exposed and deepened foundations excavated through the fill and alluvium where bedrock is deeper; the footings shall extend to 15 feet in depth. As an alternative, where deepened footings are necessary, cast-in-place drilled friction piles shall be used. A combination of conventional foundations and friction piles shall be used as long as both types are supported in the bedrock.

(d) If the building is designed and constructed with a cold joint at the transition between bedrock and fill/alluvium, the building shall be supported exclusively on shallow conventional foundations. If this option is selected, all of the fill soils must be removed and compacted, and the footings must be underlain by at least 3 feet of newly compacted fill soils.

(e) The finish floor slab shall be designed and constructed as a conventional slab where the slab is above the ground water surface. Where the finish floor is below the groundwater surface, the slab must be designed to accommodate the hydrostatic uplift.

(f) Groundwater will be encountered during construction. Dewatering measures shall be considered. It is recommended that a groundwater monitoring well be installed on the area of the two level parking garage and another at the location of the deeper alluvium. The purpose of the wells is to identify static water depths and to estimate dewatering qualities.

(g) The slope stability calculations required leaving the terrace in place at the top of the slope near Cross Section E-E'. The terrace shall be regarded to include a 2-foot thick layer of relatively impermeable soil to prevent infiltration. The layer shall be graded so that water flows

(b) The project shall comply with the conditions contained within the Department of Building and Safety's Geology and Soils Report Approval Letter for the proposed project, and as it may be subsequently amended or modified.

CM-15. Safety Hazards. The developer shall install appropriate traffic signs around the site to ensure pedestrian and vehicle safety.

CM-16. Greenhouse Gases. Only low-VOC-containing paints, sealants, adhesives, and solvents shall be utilized in the construction of the project

CM-17. Methane Zone. A methane assessment shall be conducted for the Site prior to any future redevelopment activities. All multiple residential buildings shall have adequate ventilation as defined in Section 91.7102 of the Municipal Code of a gas-detection system installed in the basement or on the lowest floor level on grade, and within the underfloor space in buildings with raised foundations.

CM-18. Asbestos-Containing Materials Operation & Maintenance Plan

(a) Based on the potential presence of asbestos-containing materials, the property owner shall implement an Operations and Maintenance (O & M) Plan which stipulates that assessment, repair and maintenance of damaged materials be performed to protect the health and safety of the building occupants.

(b) An asbestos survey adhering to Asbestos Hazard Emergency Response Act (AHERA) sampling protocol shall be performed prior to demolition or renovation activities that may disturb ACMs. This requirement shall be enforced by the local air pollution control or air quality management district, and specifies that all suspect asbestos-containing materials (ACMs) be sampled to determine the presence or absence of asbestos prior to any renovation or demolition activities to prevent potential exposure to workers and/or building occupants.

CM-19. Explosion/Release (Existing Toxic/Hazardous Construction Materials) (Asbestos). Prior to the issuance of any permit for the demolition or alteration of the existing structure(s), the applicant shall provide a letter to the Department of Building and Safety from a qualified asbestos abatement consultant indicating that no Asbestos-Containing Materials (ACM) are present in the building. If ACMs are found to be present, it will need to be abated in compliance with the South Coast Air Quality Management District's Rule 1403 as well as all other applicable State and Federal rules and regulations.

EXHIBIT B

September 8, 2021

Richard Courtney
1001 Everett St.
Los Angeles, CA 90026
&
The Silver Lake Heritage Trust
2568 Griffith Park Boulevard #277
Los Angeles, CA 90039

SUBJECT: Engineering Geology Review of Conditions at and Adjacent to the Properties at 1251 through 1259 West Sunset Boulevard, Los Angeles, California

REFERENCES: See attached References Cited

Dear Mr. Courtney and Trust Representative:

At your request we have reviewed the pertinent readily available geotechnical, geologic, and fault reports and maps with regard to the proposed development location, and the engineering geology conditions at the 1251 through 1259 property (herein referred to as the "subject properties"). There were reports prepared by Geotechnologies, Inc.in 2013 and 2014 for a proposed project immediately south of the subject properties. The reports had associated City of Los Angeles review comment letters and responses. The references used are provided at the end of this letter report. Our objective was to determine if there are potentially adverse hazardous conditions, which could impact the proposed development, adjacent properties and public safety.

Background

The "subject properties" consist of two rectangular lots (APNs 5406-016-026 and 5406-015-001) elongated east-west, each approximately 50 feet wide and 200 feet long (ZIMAS, 2021, http://zimas.lacity.org/). The proposed project (City of Los Angeles, 2021) consists primarily of a 70-unit multi-family apartment building and 35 parking spaces. The parking spaces appear to be at the surface on the rear building's roof.

Based on the available proposed site plans (City of Los Angeles, 2021), it is clear that temporary and possibly permanent cut slopes would border the north, south, and east edges of project. The temporary cut slopes would likely be up to approximately several feet to roughly 20- to 35-feet high. The adjacent lot immediately to the south has proposed and existing 30- to 35-feet high steep slopes facing south and west (Geotechnologies, Inc. 2013).

You have indicated that no geologic or geotechnical investigations have been conducted on the subject properties. There is no indication that historic aerial photographs were interpreted to determine pre-development geologic conditions at the site, for example evidence of landslides, faulting, or oil/gas drilling/development. There is no indication in the City of Los Angeles' 2018 Environmental Assessment Form (EAF) that an assessment of potential Methane Zone hazards has been addressed (ZIMAS, 2021, http://zimas.lacity.org/).

General Geologic Conditions

To our knowledge no geologic mapping has been performed at the subject properties, in connection with the proposed project. Immediately to the south (Geotechnologies, Inc., 2013) three geologic units are mapped: 1) Quaternary colluvium (map symbol Qcol), 2) Quaternary alluvium (Qal), and 3) Tertiary (Miocene) Puente Formation bedrock (Tp). Based on the size of the proposed apartments and associated parking area, the subject properties areas of with Qcol and Qal would be removed from the site, so that in those areas only Tp bedrock would remain. Although not mapped, it is likely that man-made artificial fill (af) would be found at the western portions of the subject properties and would be removed as part of the 18,200 to 19,885 cubic yards of export per the EAF.

Puente Formation is generally a well-bedded clayey siltstone with sandy siltstone (Geotechnologies, Inc., 2013) that is yellowish to grayish brown and brown in color. Geologic bedding (distinct layering in the bedrock) in the Puente Formation is tilted (dips) to the south, with variations to the southeast and southwest. Bedding orientation (mainly dip direction and amount in degrees) is critical to determining slope stability. Data on Geotechnologies, Inc. (2013) cross-section D-D' (discussed below) indicates claystone and siltstone bedding dips to the south at the south edge of the subject properties. Fractures mapped in test pits excavated and mapped in 2013 (Geotechnologies, Inc., 2013) would be important to slope stability analysis since they are planes of weakness that can separate materials into smaller block and wedge failures on cut slopes where they intersect bedding planes. Slope failures potentially affect public safety.

Faulting

Geologic faults, which can be classified as non-active, potentially active, or active. No fault mapping has been performed at the subject properties. Lamar (1970) maps a north-northwest to south-southeast trending fault a few hundred feet west of the subject properties (see Figure 1). It is not known if this fault is associated with the underlying active Elysian Park blind thrust fault, and if any potential for surface rupture/deformation exists. Due to expected mapping accuracy at the 1:24,000 map scale, the fault location could be off by a few hundred feet.

Earth Consultants, Inc. (ECI; 2003) identified what appears to be two potentially active faults at Belmont Learning Center site that project directly north-northeast toward the subject properties. ECI performed extensive state-of-the-practice trench excavations and geologic logging within the Belmont Learning Center site (overlay on Google Earth image, Figure 1). Based on the study results, the Los Angeles Unified School District made the decision to demolish all existing buildings within 50-feet of the mapped fault traces. Because the Belmont Learning Center site had been subjected to prior grading that removed younger alluvium required to provide absolute proof of fault activity, the final assessment of the degree of potential activity was indeterminate.

Figure 1 shows the ECI faults, projected along the strike direction, to pass through and very near the subject properties. The distance of the projection appears reasonable based on the similarly oriented and similar length fault mapped by Lamar (1970) west of the Belmont Learning Center. The potential for these ECI faults to project to the north-northeast through the subject properties raises the concern that a potentially active fault (for which LAUSD demolished several useable buildings) could underlie the subject properties. No studies have been performed, or have been required, for the proposed 70-unit multi-family apartment building and associated 35 parking spaces. An active or potentially active fault would have public safety implications.

Slope Stability Considerations

Geotechnologies, Inc. (2013) prepared five geologic cross-sections A-A' through E-E' for the project proposed south of the subject properties to analyze the slope stability for temporary and permanent slopes planned for the proposed mixed use/retail development area. Section D-D' extends north into the subject properties (Figure2) and is oriented generally north-south through the approximately 35-feet high vertical proposed temporary cut slope at the north edge of the property immediately adjacent to the subject properties. Section D-D' shows geologic apparent bedding angles out of the temporary vertical slope dipping at angles up to approximately 25 degrees. Geotechnologies, Inc. (2013) Test Pit 5 (TP5) located immediately south of the 1251 site indicates cross-cutting vertical joints that are expected to exist beneath the subject properties.

This "out-of-slope" bedding condition (Figure 2) indicates that the southern portion of the 1251 site is potentially unstable and a bedding plane failure is possible with movement to the south or southeast. Geotechnical exploration, laboratory testing, and slope stability analyses are necessary to determine the degree of potential instability and the level of hazard posed by the proposed development to the 1251 site and surrounding areas see Figure 2 red cloud areas). To our knowledge no such studies, testing, or analyses have been performed.

Considering the geologic structures (bedding and joints) as discussed above, some mapped bedding attitudes (e.g., see the attitude of ~20 degrees in section D-D') would exhibit an out-of-slope component. Translational failure slope stability analyses along such a component could be critical, which could impact the feasibility of the slope design. In addition, some of the vertical joints might also present areas of weaker strength affecting the slope stability calculations. Therefore, these factors should be accounted for as necessary in translational failure slope stability analyses in the areas shown on Figure 2.

Groundwater or seepage was noted in borings excavated at the site and discussed by Geotechnologies, Inc. (2013). Structures upslope from the project site appear to be in areas where rainfall, irrigation, and surface run off could infiltrate the ground surface and flow down gradient toward the project site. It is assumed that the pathways would be predominantly along fractures and bedding planes in the Puente Formation bedrock. This condition should be fully considered in slope stability analyses.

Summary

Our review indicates several technical issues that we feel should be considered and addressed prior to approval of the project as it is currently defined. In particular, the Methane Zone hazards, potential fault locations/activity levels and bedrock slope stability due to the proposed slope angles, the dip angles of existing bedrock bedding, assumed material strengths, presence of fractures, up slope groundwater/seepage, and orientation/height of the proposed permanent and temporary slopes.

Closure

This report has been prepared for the sole use and benefit of the addressees. The analysis, results, and conclusions were prepared in general compliance with normal industry practice in Los Angeles County. Other consultants may arrive at different results and conclusions with the same information. The intent of the report is to advise our client of engineering geologic and related conditions at the subject site, and the possible effects of these conditions on the proposed

development and surrounding properties. It should be understood that the engineering geologic consulting provided represents professional opinions and the contents of this report are not perfect. Any errors or omissions noted by any party reviewing this report should be reported to Wilson Geosciences Inc. in a timely fashion. Only the client can authorize subsequent use of this report. No warranty is either expressed or implied.

Please contact the undersigned if you have any questions.

Sincerely,

WILSON GEOSCIENCES INC.

Kenneth Wilson
Principal Geologist
P.G. #3175, C.E.G. #928
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REFERENCES CITED

City of Los Angeles, 2018, Environmental Assessment Form for Case Number ENV-2018-6635-EAF, filed 11/13/2018.

City of Los Angeles, 2021, Director's Determination Transit Oriented Communities Affordable Housing Incentive Program, August 26, 2021, 34 pages.

Earth Consultants International, 2003, Investigation of Faulting Potential on the Belmont Learning Center Site.

Geotechnologies, Inc., 2013, Geotechnical Engineering Investigation, Proposed Apartment Complex, 1185 West Sunset Boulevard, Los Angeles, California, dated April 9, 2013.

Geotechnologies, Inc., 2014, Response to Soils Report Correction Letter, Proposed Apartment Complex, 1185 West Sunset Boulevard, Los Angeles, California, dated March 4, 2014.

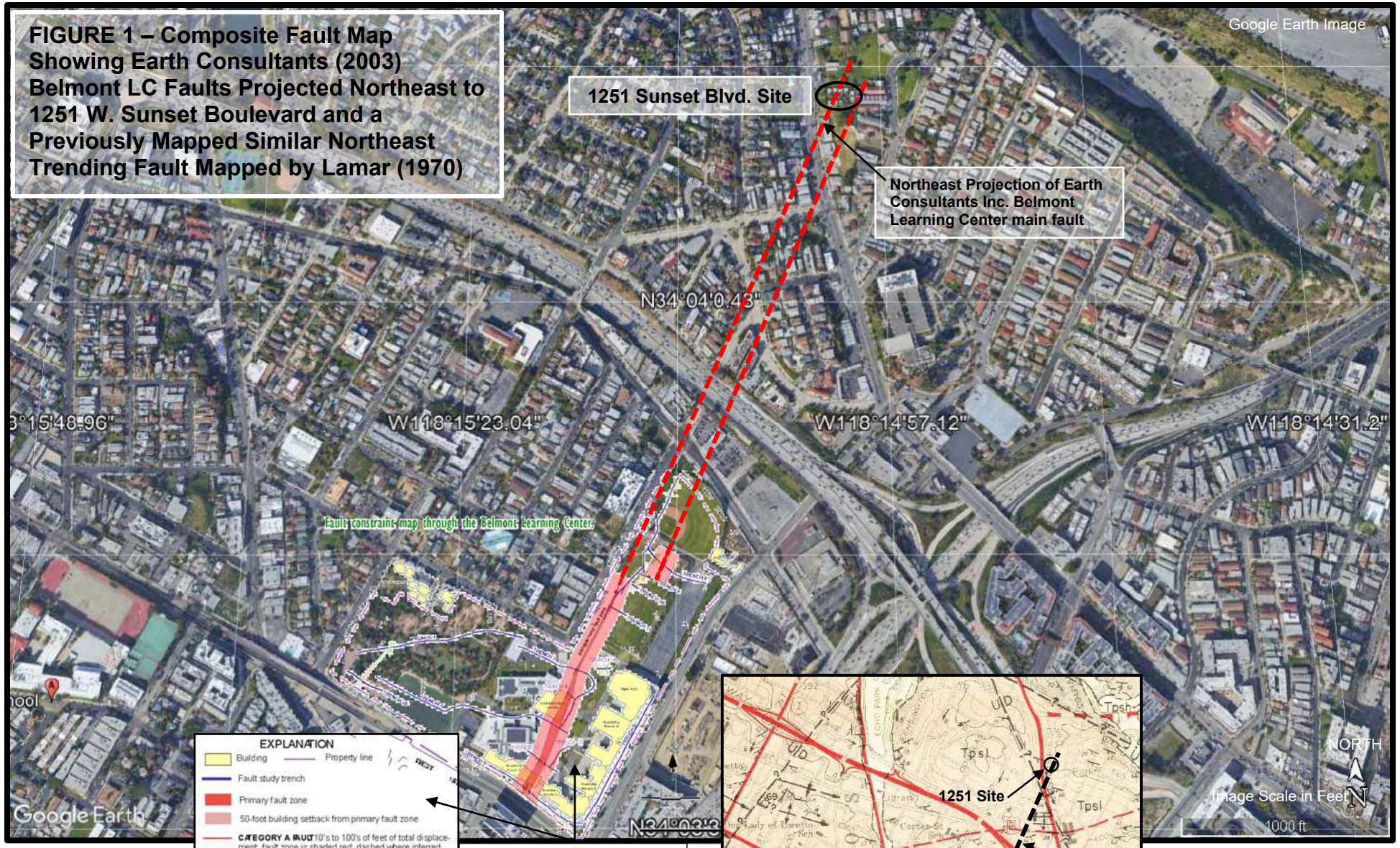
Geotechnologies, Inc., 2014, Response to Soils Report Correction Letter, Proposed Apartment Complex, 1185 West Sunset Boulevard, Los Angeles, California, dated May 22, 2014.

Lamar, D. L. 1970, Geology of the Elysian Park-Repetto Hills Area, Los Angeles County, California, Geologic Map 1:24,000.

FIGURES (SEE ATTACHED BELOW)

FIGURE 1 – Composite Fault Map Showing Earth Consultants (2003) Belmont LC Faults Projected Northeast to 1251 W. Sunset Boulevard and a Previously Mapped Similar Northeast Trending Fault Mapped by Lamar (1970)

FIGURE 2 – A Portion of the Geotechnologies Inc. (2013) Geology Map, Cross-section D-D', and ZIMAS Cadastral Map with Five-Foot Contours



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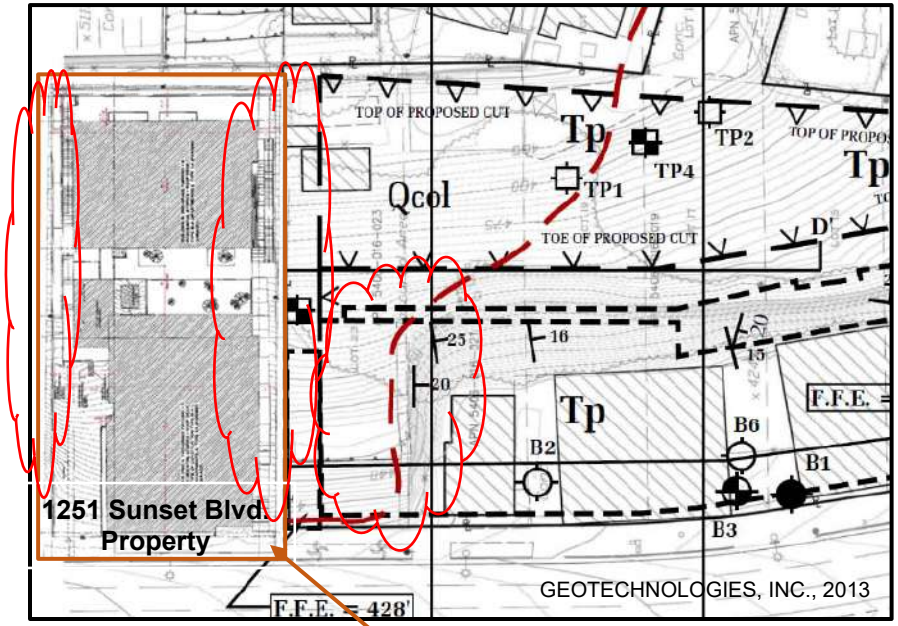


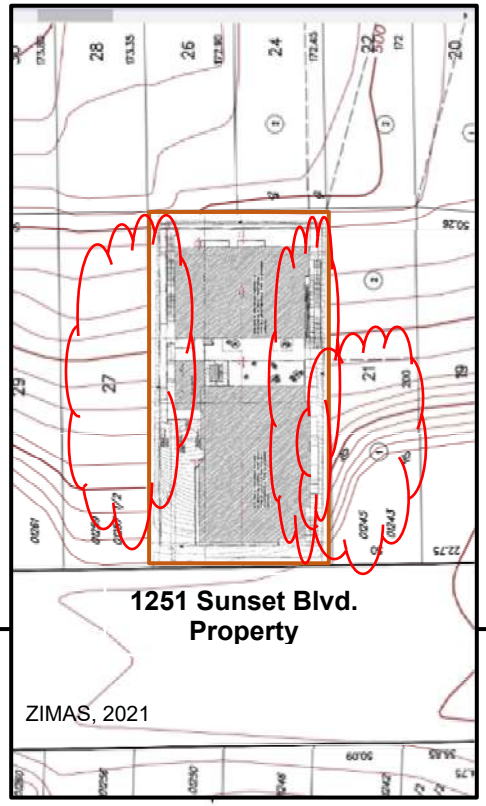
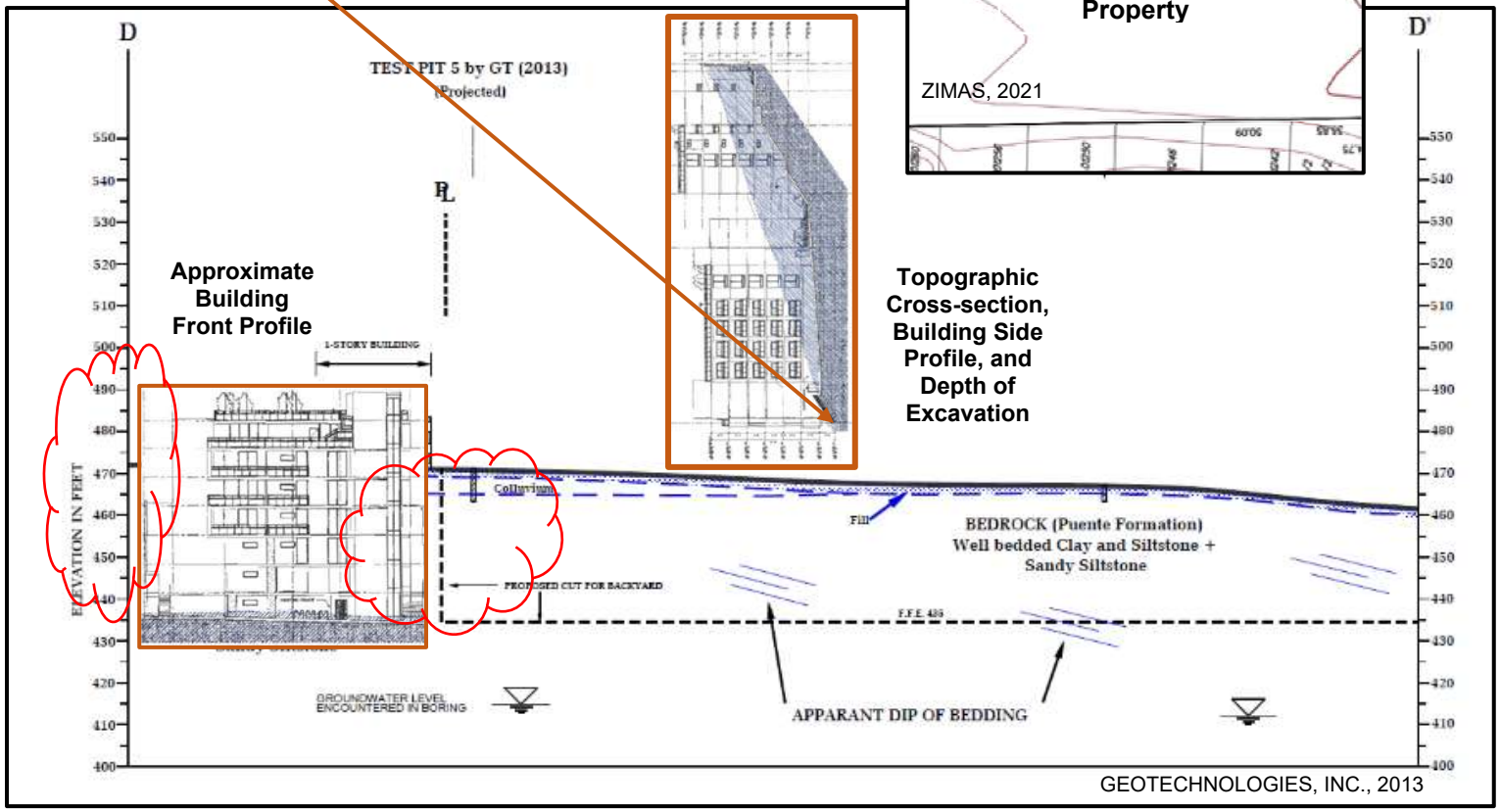


FIGURE 2 – A Portion of the Geotechnologies Inc. (2013) Geology Map, Cross-section D-D', Proposed Building Profiles, ZIMAS Cadastral Map with Five-Foot Contours

Proposed Building Footprint



Areas of Potentially Unstable Permanent and Temporary Slopes Due to Out-of-Slope Bedding

EXHIBIT C

The Human Footprint and the Last of the Wild

ERIC W. SANDERSON, MALANDING JAITEH, MARC A. LEVY, KENT H. REDFORD, ANTOINETTE V. WANNEBO, AND GILLIAN WOOLMER

In Genesis, God blesses human beings and bids us to take dominion over the fish in the sea, the birds in the air, and every other living thing. We are entreated to be fruitful and multiply, to fill the earth, and subdue it (Gen. 1:28). The bad news, and the good news, is that we have almost succeeded.

There is little debate in scientific circles about the importance of human influence on ecosystems. According to scientists' reports, we appropriate over 40% of the net primary productivity (the green material) produced on Earth each year (Vitousek et al. 1986, Rojstaczer et al. 2001). We consume 35% of the productivity of the oceanic shelf (Pauly and Christensen 1995), and we use 60% of freshwater run-off (Postel et al. 1996). The unprecedented escalation in both human population and consumption in the 20th century has resulted in environmental crises never before encountered in the history of humankind and the world (McNeill 2000). E. O. Wilson (2002) claims it would now take four Earths to meet the consumption demands of the current human population, if every human consumed at the level of the average US inhabitant. The influence of human beings on the planet has become so pervasive that it is hard to find adults in any country who have not seen the environment around them reduced in natural values during their lifetimes—woodlots converted to agriculture, agricultural lands converted to suburban development, suburban development converted to urban areas. The cumulative effect of these many local changes is the global phenomenon of human influence on nature, a new geological epoch some call the "anthropocene" (Steffen and Tyson 2001). Human influence is arguably the most important factor affecting life of all kinds in today's world (Lande 1998, Terborgh 1999, Pimm 2001, UNEP 2001).

Yet despite the broad consensus among biologists about the importance of human influence on nature, this phenomenon and its implications are not fully appreciated by the larger human community, which does not recognize them in its economic systems (Hall et al. 2001) or in most of its political decisions (Soulé and Terborgh 1999, Chapin et al. 2000). In part, this lack of appreciation may be due to scientists' propensity to express themselves in terms like "appropriation of net primary productivity" or "exponential population growth," abstractions that require some training to understand. It may be due to historical assumptions about and habits inherited from times when human beings, as a group, had dramatically less influence on the biosphere. Now the individual deci-

THE HUMAN FOOTPRINT IS A GLOBAL MAP OF HUMAN INFLUENCE ON THE LAND SURFACE, WHICH SUGGESTS THAT HUMAN BEINGS ARE STEWARDS OF NATURE, WHETHER WE LIKE IT OR NOT

Eric W. Sanderson (e-mail: esanderson@wcs.org) is associate director, and Gillian Woolmer is program manager and GIS analyst, in the Landscape Ecology and Geographic Analysis Program at the Wildlife Conservation Society Institute, 2300 Southern Blvd., Bronx, NY 10460. Kent H. Redford is director of the institute. Malanding Jaiteh is a research associate and GIS specialist, Marc A. Levy is associate director for science applications, and Antoinette V. Wannebo is senior staff associate at the Center for International Earth Science Information Network (CIESIN), Columbia University, 61 Route 9W, Palisades, NY 10964. Sanderson's research interests include applications of landscape ecology to conservation problems and geographical and historical contexts for modern conservation action; he has recently published scientific articles on conservation planning for landscape species and rangewide conservation priorities for the jaguar. Woolmer's research interests include the application of geographic information systems and other technologies for field and broad-based conservation activities. Redford has written extensively about the theory and practice of conservation. Levy, a political scientist with a background in international relations and public policy, conducts research on international environmental governance, sustainability indicators, and environment–security interactions. Jaiteh's research interests include applications of remote sensing and geographic information systems technologies in human–environment interactions, particularly the dynamics of land use and cover change in Africa. Wannebo's research interests include detecting land use and land cover changes using remote sensing.

sions of 6 billion people add up to a global phenomenon in a way unique to our time. What we need is a way to understand this influence that is global in extent and yet easy to grasp—what we need is a map.

Until recently, designing such a map was not possible, because detailed data on human activities at the global scale were unavailable. The fortunate confluence of several factors during the 1990s changed this situation. Rapid advances in earth observation, using satellite technology pioneered by NASA and other space agencies, meant that, for the first time, verifiable global maps of land use and land cover were available (Loveland et al. 2000). The thawing of the cold war and calls for efficiency in government meant that other sources of global geographic data, for example, on roads and railways, were released to the public by the US National Imagery and Mapping Agency (NIMA 1997). Improved reporting of population statistics at subnational levels enabled geographers to create global digital maps of human population density (CIESIN et al. 2000). Finally, advances in geographic information systems (GIS) have provided the integration technology necessary to combine these data in an efficient and reproducible manner. Although the datasets now available are imperfect instruments, they are of sufficient detail and completeness that scientists can map the influence of humans on the entire land's surface.

We call our map of human influence "the human footprint," conscious of its similarity to the ecological footprint, a set of techniques for estimating the amount of land or sea necessary to support the consumption habits of one individual, population, product, activity, or service (Wackernagel and Rees 1996). The human footprint represents in some sense the sum total of ecological footprints of the human population. It expresses that sum not as a single number, however, but as a continuum of human influence stretched across the land surface, revealing through its variation the major pattern of human influence on nature.

Mapping the human footprint

Our technique for mapping the human footprint grows out of a recent tradition of wilderness mapping (McCloskey and Spalding 1989, Lesslie and Malsen 1995, Aplet et al. 2000, Yaroshenko et al. 2001), which focuses on defining human influence through geographic proxies, such as human population density, settlements, roads, and other access points, and includes factors such as the size and remoteness of an area. However, except for the Sierra Club map of wilderness (McCloskey and Spalding 1989) that was created before the widespread use of GIS and incorporated only one of the data types we use here, none of these earlier efforts were made at the global scale.

Advances have been made in understanding human disturbance globally since George Marsh first asked, "To what degree are the processes of nature threatened by human activity?" in his 1864 work, *Man and Nature* (quoted in Hannah et al. 1994; see also Lowdermilk 1953, Thomas 1956, and Bennett 1975). More recent efforts include the human disturbance index (Hannah et al. 1994, 1995), which used digitized maps from Rand-McNally atlases and other sources to classify areas as "human-dominated," "partially disturbed," or "undisturbed"; according to that index, nearly three-quarters of the habitable surface of the planet is disturbed at least in part by human use. The Global Methodology for Mapping Human Impacts on the Biosphere (GLOBIO; UNEP 2001) estimates the amount of disturbance on flora and fauna according to their distance from human infrastructure (e.g., roads, pipelines, settlements). Originally focused on scenarios of historic, current, and future impact in the Arctic region, these analyses have recently been expanded to the global scale (see *www.globio.info* for updates). The human footprint has important parallels to all these efforts, which, though approaching the question using a variety of data sources and methodologies, arrive at largely the same answer.

To map the human footprint, we used four types of data as proxies for human influence: population density, land transformation, accessibility, and electrical power infrastructure. Nine datasets that represent these four data types (table 1) were selected for their coverage, consistency, availability, and relevance, but they provide only an incomplete description of human influence on nature. For example, most of these datasets do not include Antarctica or many small oceanic islands, and thus we had to exclude these areas from our analysis. In addition, we confined our analysis to the terrestrial realm, because a different set of inputs would be required to map human influence in the oceans. Effects of pollution, global warming, increased exposure to ultraviolet radiation, and other global phenomena, although they have important consequences for terrestrial ecosystems, are not included. For this analysis we focused on the direct measures of human infrastructure and population that have the most immediate impact on wildlife and wild lands and for which geographic data were readily available. To combine the nine datasets, we needed to (1) present them in one map projection, using a consistent set of coastal boundaries and regions; (2) express them as overlaying grids at a resolution of 1 square kilometer (km^2); and (3) code each dataset into standardized scores that reflected their estimated contribution to human influence on a scale of 0 to 10 (0 for low human influence, 10 for high).

These codes were based on published scientific studies and consultation with a range of biologists, social scientists, and conservationists, as summarized below.

Human population density. The number of people in a given area is frequently cited as a primary cause of declines in species and ecosystems (Cincotta and Engelman 2000), with higher human densities leading to higher levels of influence on nature. A recent study by Brashares and colleagues (2001) showed that 98% of the variation in extinction rates in national parks in Ghana over a 30-year period could be explained by the size of the park and by the number of people living within 50 km of it—the higher the density and the smaller the park, the higher the extinction rate. Others have

Table 1. Geographic datasets used to map the human footprint.

Dataset type	Dataset name	Year	Sources	Reference
Population density	Gridded Population of the World	1995	CIESIN	CIESIN 2000
Land transformation	Global Land Use/Land Cover version 2	1992–1993	USGS/UNL/JRC	Loveland et al. 2000
	Vector Map Level 0 Built-Up Centers	1960s–1990s	NIMA	NIMA 1997
	Vector Map Level 0 Population Settlements	1960s–1990s	NIMA	
	Vector Map Level 0 Roads and Railways	1960s–1990s	NIMA	
Access	Vector Map Level 0 Roads and Railways	1960s–1990s	NIMA	NIMA 1997
	Vector Map Level 0 Coastline			
	Vector Map Level 0 Rivers (major rivers defined as rivers represented by continuous polygons to the sea)			
Electrical power infrastructure	Defense Meteorological Satellite Program, Stable Lights	1994–1995	NOAA/NGDC	Elvidge et al. 1997a
Biome normalization	Terrestrial Biomes	2001	WWF	Olson et al. 2001
	Terrestrial Biogeographic Realms	2001	WWF	

CIESIN, Center for International Earth Science Information Network, Columbia University; JRC, Joint Research Centre of the European Commission; NGDC, National Geophysical Data Center; NIMA, National Imagery and Mapping Agency; NOAA, National Oceanic and Atmospheric Administration; UNL, University of Nebraska, Lincoln; USGS, US Geological Survey; WWF, World Wildlife Fund for Nature, United States

Note: Although the Vector Map Level 0, ed. 3, datasets were published in 1997, the datasets on which they are based are derived from Defense Mapping Agency Operational Navigational Charts developed from the mid-1960s through the early 1990s.

found similar results for national parks in the western United States and small reserves across Africa (Parks and Harcourt 2002, Harcourt et al. 2001, respectively). Robinson and Bennett (2000) note that, in terms of sustainable hunting levels, the land's carrying capacity for people who depend exclusively on game meat will not greatly exceed one person per km^2, even under the most productive circumstances. Simple mathematics suggests that the greater the number of people, the more resources that will be required from the land, as mediated by their consumption rate (Malthus 1798, Wackernagel and Rees 1996).

Beyond this general understanding, there is little guidance in the literature about how human influence exactly scales with human population density (Forester and Machlis 1996). The consequences of interactions between human population density and the environment depend on the nature of the interaction and the particular species, ecosystems, or processes in question. In this study, we used a continuum approach, in which human influence scores for densities between 0 and 10 persons per km^2 increased linearly from 0 to 10 and the score above 10 persons per km^2 was held constant at 10. We assume that human influence attributable solely to human population density reaches an asymptote at some level, though at what density that influence evens out is uncertain; we chose 10 persons per km^2 as an estimate.

Land transformation. Called the single greatest threat to biological diversity, land transformation has resulted in loss and fragmentation of habitat in many different ecosystem types (Vitousek 1997). Moreover, fragmentation often facilitates additional negative consequences to species and ecosystems beyond the simple loss of habitat, in concert with other processes and over time (Crooks and Soulé 1999, Laurance and Cochrane 2001). Human beings transform land to build settlements, grow food, and produce other economic goods (e.g., Geist and Lambin 2002); different land uses, however, differ in the extent to which they modify ecosystem processes and affect the quality of habitat for different species (Goudie 1986, Forman 1995). Growth of agriculture over the last 30 years has led to large changes in worldwide rates of nitrogen fixation and phosphorus accumulation in soils and water and increased demands on fresh water for irrigation (Tilman et al. 2001).

We assigned the maximum score (10) to built-up environments; lower scores (6, 7, or 8, depending on level of input) to agricultural land cover; and lower scores still (4) to mixed-use cover. Other types of land use, notably extensive grazing lands in arid areas, are difficult to map and are most likely underestimated in our analysis. We assigned a value of 0 to all other land cover types—forests, grasslands, and Mediterranean ecosystems, for example—although those cover types are subject to various kinds of human uses.

Land transformation also includes the direct effects of roads and railways on species and ecosystems. Not all species and ecosystems are equally affected by roads, but overall the presence of roads is highly correlated with changes in species composition, including increases in nonnative invasive species, decreased native species populations through direct and in-

direct mortality, and modification of hydrologic and geomorphic processes that shape aquatic and riparian systems (Trombulak and Frissell 2000). Lalo (1987) estimated that 1 million vertebrates a day are killed on roads in the United States. Forman and Deblinger (2000) estimated that the effects of American roads extend over a band approximately 600 meters (m) wide. The nominal spatial accuracy of all of the NIMA datasets (table 1) is 2 km. Therefore, we assigned a score (8) for the direct effect of roads and railways within a 2 km buffer to ensure that we captured the actual location of the road as mapped, although we may be overestimating the spatial extent of influence. While we recognized that road influence depends on the type of road and the amount of traffic passing along it, we were unable to include these factors in our analysis because of the imprecision of the datasets. The effect of overlapping influence from multiple roads on the same location was not included.

We also used the independently derived NIMA datasets on settlements (represented by points with 2 km buffers) and built-up areas. The settlement data include a large variety of settlement types, such as camps, buildings, and monuments, but the vast majority of features are of unknown type. We assigned each point a score of 8. The built-up areas, which typically represent the largest cities as polygons in the NIMA database, were assigned a score of 10.

Human access. Roads, major rivers, and coastlines provide opportunities for hunting and extraction of other resources, pollution and waste disposal, and disruption of natural systems, as well as social and economic gain (Gucinski et al. 2001). As a result, designating areas of remoteness is a common element of many wilderness-mapping exercises (e.g., Lesslie and Malsen 1995, Aplet et al. 2000). Hunting of wildlife no longer supplies a significant source of food in the western world, but it does in most of the rest of the world. Such hunting, with its associated disruption of ecosystems, is of major concern (Robinson and Bennett 2000), because it could result in some forests ecosystems being "emptied" by overhunting (Redford 1992). In tropical ecosystems, access from rivers and the coast may be more important than access from roads (Peres and Terborgh 1995).

To measure the area affected by access, we estimated the distance a person could walk in one day in a difficult-to-traverse ecosystem (e.g., moist tropical forests) as 15 km (see, e.g., Wilkie et al. 2000). We acknowledge, however, that this approach oversimplifies the complex relationship between human beings and roads, a relationship that varies by ecosystem type and cultural context. All areas within 2 to 15 km of a road, major river, or coast were assigned a modest human influence score (4) that reflects intermittent use. Major rivers were defined roughly as those that reach the sea and are wide enough

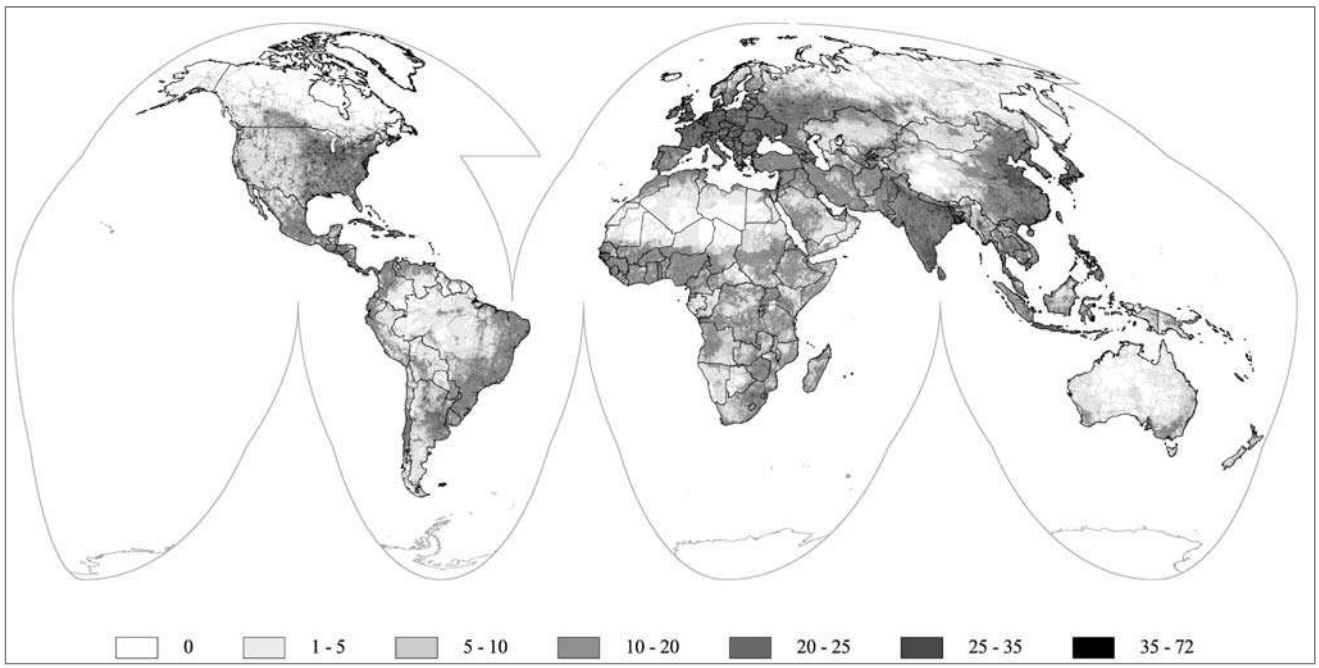


Figure 1. The human influence index. Scores range from 0 to a maximum of 72; higher scores indicate greater human influence, lower scores less human influence. Analysis indicates that 83% of the land surface is influenced by one or more of the following factors: human population density greater than one person per square kilometer (km^2); agricultural land use; built-up areas or settlements; access within 15 km of a road, major river, or the coastline; and nighttime light bright enough to be detected by satellite sensor. Almost 98% of the areas where rice, wheat, or maize can be grown (FAO 2000) is influenced by one or more of these factors. The analysis excludes Antarctica and most oceanic islands, and national boundaries are not authoritative.

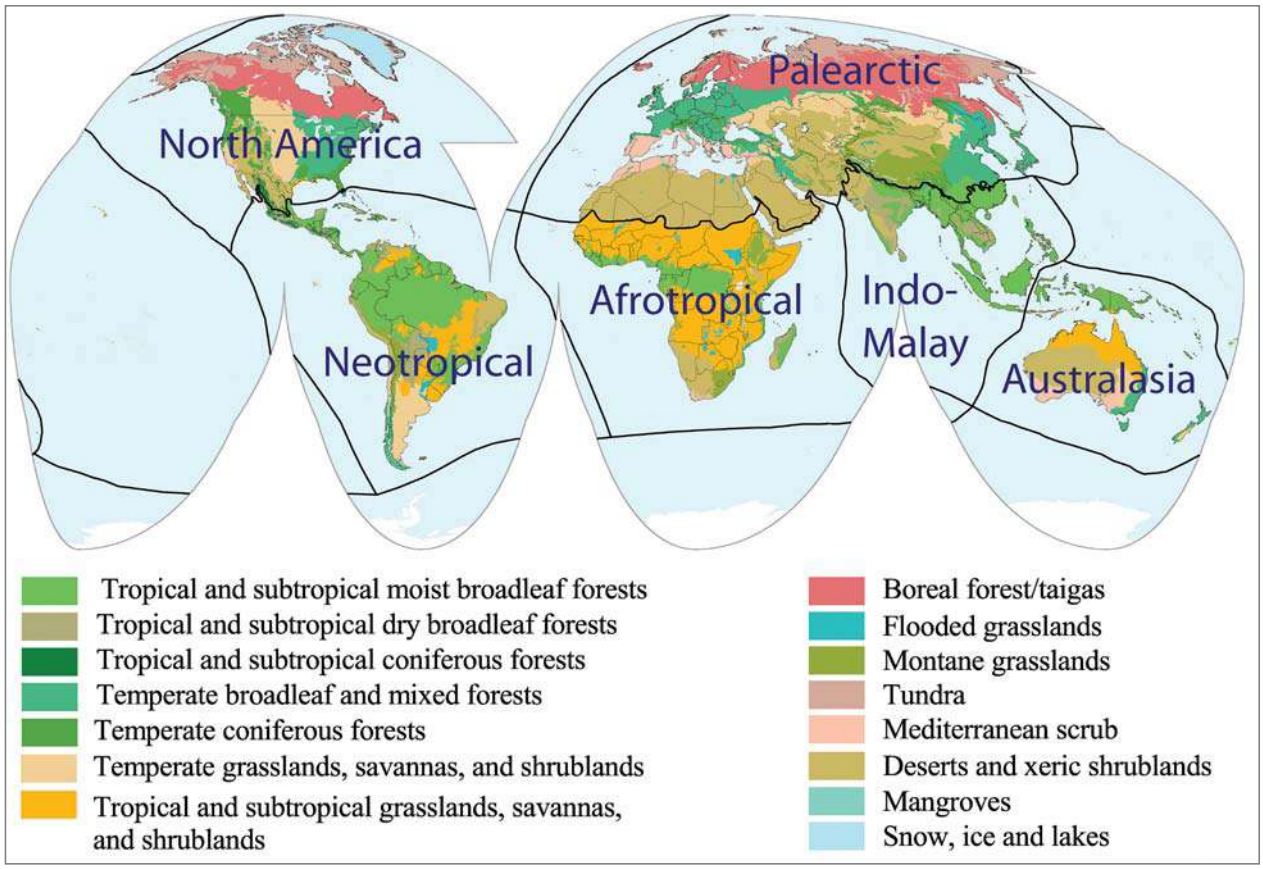


Figure 2. Biomes and biogeographic realms that are used to normalize human influence (Olson et al. 2001). Figure used with permission from World Wildlife Fund–United States.

to be recorded as polygons in the NIMA database, although this definition most likely underestimates the extent of access along rivers, since any river wide enough to float a dugout canoe is a potential access point. We did not include the effects of waterfalls or dams, which limit access upriver, because data were inadequate. Thus, access along some waterways may be overestimated.

Power infrastructure. Many of the dramatic changes in human influence that are due to land use change and access during the 20th century have literally been fueled by fossil energy. Before the industrial revolution, the human capacity to modify the environment was limited by human and animal muscle power, what McNeill (2000) called the "somatic energy regime." Today one human being with a bulldozer can apply the power of 300 horses to modify the environment. Electrical power provides an excellent estimate of the technological development of a local area (Elvidge et al. 1997a) and the use of fossil fuels. In the United States, where electrical power is available nearly everywhere, the lights visible at night from satellites provide a proxy of population distribution and have been correlated with human settlements (Sutton et al. 1997, Elvidge et al. 1997b). We assigned a score of 10 to areas that have lights visible more than 89% of nights, 8 to areas with lights visible 40% to 88% of nights, 4 to areas with lights visible less than 40% of nights, and 0 to areas where no lights were visible.

Summing the scores. We summed the human influence scores for each of the nine datasets to create the human influence index (HII) on the land's surface (figure 1). Overall, 83% of the land's surface, and 98% of the area where it is possible to grow rice, wheat, or maize (FAO 2000), is directly influenced by human beings (HII > 0). The theoretical maximum (72) is reached in only one area, Brownsville, Texas, USA, but the top 10% of the highest scoring areas looks like a list of the world's largest cities: New York, Mexico City, Calcutta, Beijing, Durban, São Paulo, London, and so on. The minimum score (0) is found in large tracts of land in the boreal forests of Canada and Russia, in the desert regions of Africa and Central Australia, in the Arctic tundra, and in the Amazon Basin. The majority of the world (about 60%), however, lies along the continuum between these two extremes, in areas of moderate but variable human influence.

The human influence index, like the GLOBIO methodology or the human disturbance index, treats the land surface as if it were a blank slate on which human influence is written, but we know this is not the case. The distribution of major ecosystem types and the human histories of different regions modify the biological outcomes of human influence (cf.

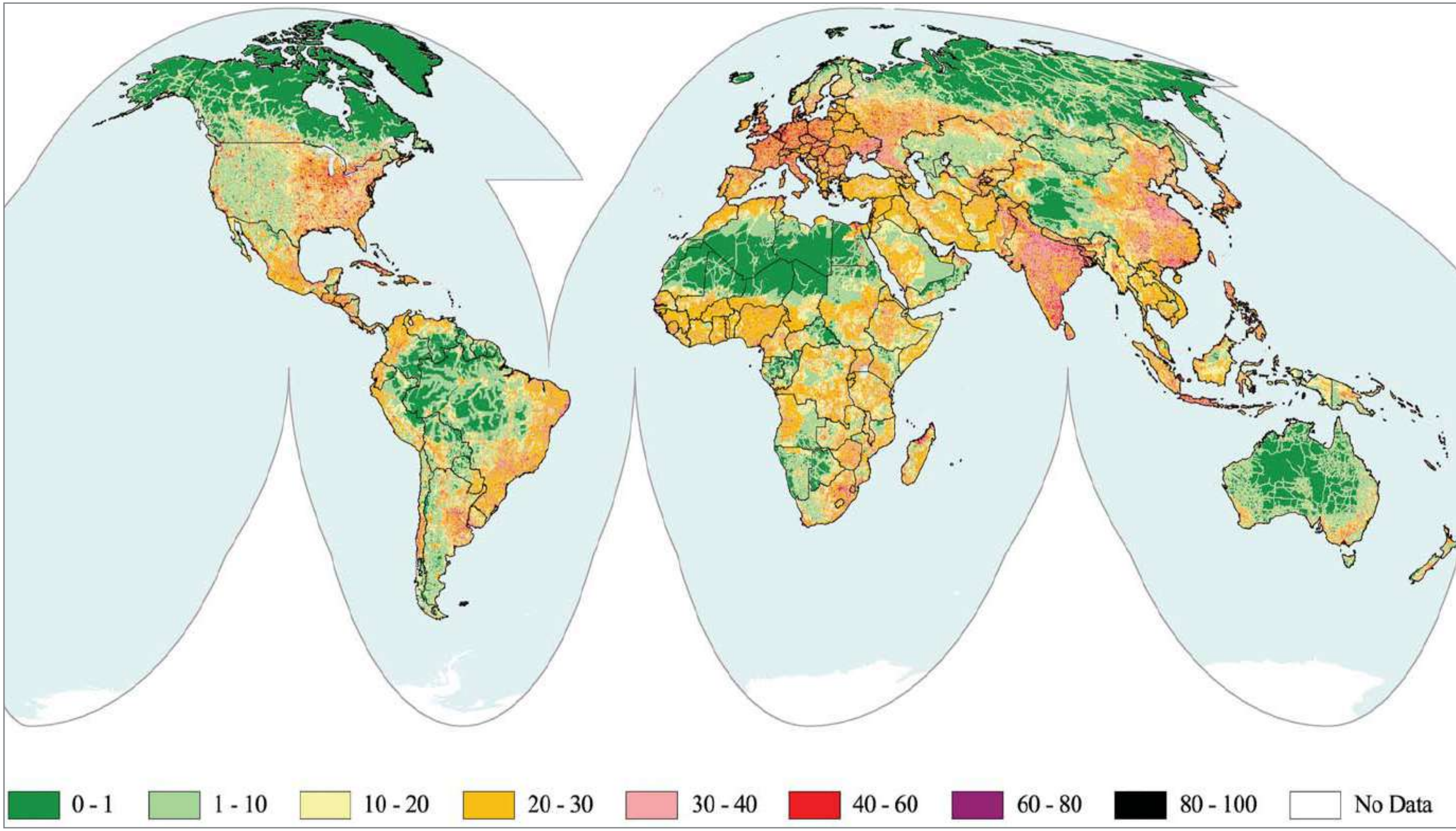


Figure 3. The human footprint, a quantitative evaluation of human influence on the land surface, based on geographic data describing human population density, land transformation, access, and electrical power infrastructure, and normalized to reflect the continuum of human influence across each terrestrial biome defined within biogeographic realms. Further views and additional information are available at "Atlas of the Human Footprint" Web site, www.wcs.org/humanfootprint. *Data are available at* www.ciesin.columbia.edu/wild_areas/. *National boundaries are not authoritative.*

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Chapin et al. 2000). For example, an absolute score of 25 in the mixed broadleaf forests of North America might have a different effect, and definitely has a different biological context, than the same score in the rain forests of the African tropics. Because we were interested in the interaction between human influence and the natural environment, we normalized human influence scores within large, regionally defined biomes, which were differentiated within still larger biogeographic realms (e.g., Palearctic, Indo-Malay, Neotropic), in accordance with the geographic definitions provided by the World Wildlife Fund–US Conservation Science Program (figure 2; Olson et al. 2001). We assigned a revised score of 0 to the grid cell with minimum HII value in each biome in each realm and a score of 100 to the cell with maximum value, stretching intermediate values linearly between these extremes (table 2, pp. 901, 902).

The result is the human footprint (figure 3). The human footprint expresses as a percentage the relative human influence in every biome on the land's surface. A score of 1 in moist tropical forests in Africa indicates that that grid cell is part of the 1% least influenced or "wildest" area in its biome, the same as a score of 1 in North American broadleaf forest (although the absolute amount of influence in those two places may be quite different). In fact, there is considerable variation in levels of both overall and mean human influence between biomes (table 2). Examining the human footprint on a larger scale shows the patterns of roads, settlements, land uses, and population density for a particular area—the geography of human influence. For example, on a map of the northeastern United States (figure 4), urbanization in the coastal region is clearly visible, as are major highway corridors along the shore and up the Hudson River and Connecticut River valleys. Relatively wilder areas appear in the Catskills, Adirondacks, and Green Mountains.

We propose that this geography of human influence is roughly the inverse of the geography of natural processes and patterns in the region. Given what we know about the effects of the input factors on nature, we expect that where human influence is highest, ecosystems will be most modified and species under the most pressure from human activity. Where the human footprint values are lower, we expect more intact and functional natural communities. The exact consequences of human influence in any given location are complicated, however, and depend on the history of the place, the types of the current influence, and the parts of nature that we are concerned with (Redford and Richter 1999). We know that some aspects of nature survive, and even thrive, in the midst of our cities, while even in the wildest places, human influence frequently has reduced or is reducing natural values. Yet it is in these wildest places that the greatest freedom and opportunity to conserve the full range of nature still exists.

Finding the last of the wild

It follows from mapping the human footprint that it is also possible to map the least influenced, or "wildest," areas in each biome. We searched through the human footprint to find the "10% wildest areas" in each biome in each realm around the world (the biomes that fell within the 10% cutoff on the HII are listed in table 2). From this set of wildest areas, we selected the 10 largest contiguous areas as the "last of the wild" (figure 5), because such large, intact tracts of relatively undisturbed ecosystems are particularly important for conserving biological diversity (Newmark 1987, Grumbine 1990). Some of the areas defined as the last of the wild are well over 100,000 km^2 in some biomes; in other biomes, we could not find even 10 areas larger than 5 km^2. The size of areas depends on the spatial pattern of human influence above the 10% level; in most biomes, however, roads or patterns of settlement are sufficient to divide one wild area from another. The proportion of area represented by the last of the wild varies dramatically among biomes, depending on the statistical distribution of human influence. Thus, over 67% of the area in the North American tundra is captured as last of the wild, while the 10% wildest area of the Palearctic tropical and subtropical moist broadleaf forests (all in China) encompasses less than 0.03% of that biome.

In total, we selected 568 last-of-the-wild areas, representing all biomes in all the realms. A complete listing of the last-of-the-wild areas can be found on our Web sites, where we characterize each of these wild areas by population density, road density, biome, and region (Atlas of the Human Footprint: *www.wcs.org/humanfootprint;* geographic datasets: *www.ciesin.columbia.edu/wild_ areas/)*. Many of these wild areas contain existing protected areas, but many do not, just as some contain roads and settlements, while others do not. The list of last-of-the-wild areas is a guide to opportunities for effective conservation—these are the places where we might conserve the widest range of biodiversity with a minimum of conflict. They are not and should not be interpreted as a self-contained prescription for complete nature conservation. For example, in the Afrotropical realm, all 10 of the last-of-the-wild areas in the tropical and subtropical moist broadleaf forests biome fall in Central Africa (figure 6). Other parts of the African moist broadleaf forests, in West Africa or Madagascar, are also important for conservation, but their conservation takes place in the context of higher levels of human influence.

There are many ways of using the human footprint to define areas of interest for conservation, depending on the desired conservation objectives. Although area size is often important, for some applications, it may be useful to identify the wildest areas in each biome, regardless of size, for example, the wildest 1% of areas ("seeds of wildness"). Others might use the human footprint to find the areas facing the greatest threat, although those areas may already have lost much of what made them biologically distinct. Whether defining "seeds" or the "last of the wild" or measuring threats, the human footprint provides a flexible tool for identifying areas at different points along the human influence continuum.

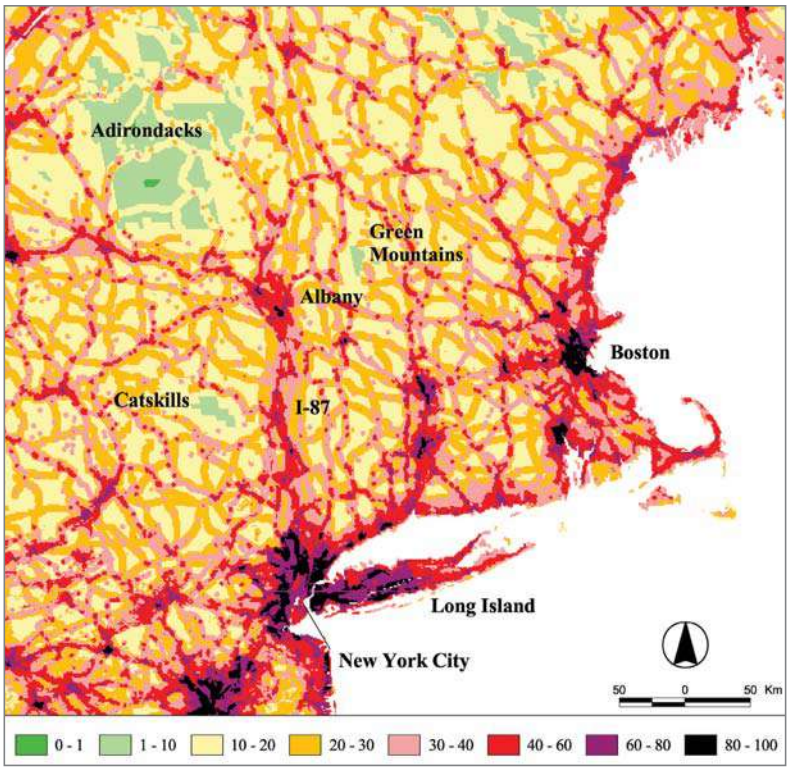


Figure 4. The "human footprint" in the northeastern United States.

Interpreting the human footprint and the last of the wild

The measures of human influence used in this study have many shortcomings that the reader needs to be cognizant of when interpreting the results. First, it is important to acknowledge that although population density, land use changes, access to roads and rivers, and lights visible at night, for example, have been and continue to be drivers of the human impact on nature, drivers are not inevitably harmful. The human footprint does not measure impact per se; rather, it suggests areas of influence where humans have more or less responsibility for biological outcomes. Thoughtful practices and careful planning can mitigate the human influence on ecosystems, as conservation biology and restoration ecology have shown (Stevens 1995). In fact, one of the more interesting uses of the human footprint may be to identify places where sensitive species thrive despite high levels of human influence and determine which human behaviors enable coexistence.

Second, even with modern mapping tools, tremendous effort and expense are required to develop the input datasets used here—in fact, many of these data were developed for the first time only in the 1990s and only through large, government-funded projects. As a result, the datasets tend to lag behind the patterns they seek to depict: growing populations, new road construction, and clearing of new land for human uses. Similarly, the methods used to develop the datasets have shortcomings that result in imperfect representations—underestimates of the amount of grazing lands or insufficient detail about the kinds of settlements or the locations of roads, for instance—that also tend to cloud our view of the extent and severity of human influence. Moreover, there are simply mistakes in these global datasets: Chunks of roads are missing, rivers are more (or less) accessible than they appear, population densities vary unusually across national boundaries, agricultural areas are inaccurately mapped, and so on. Because of these problems, the reader should take care in drawing conclusions from the human footprint for local areas, while not losing sight of the global pattern and its significance.

Finally, our ability to interpret patterns of human influence that are based on geographic features is constrained by the complexities of human interactions with nature and our limited understanding of them. For example, we know that the distance people travel from roads and rivers is less in the temperate zone than in the tropics and that per capita consumption in the developed world results in impacts not just locally, but across the globe. Yet we don't know enough about either of these to assess them globally in a consistent manner. We make no strong claims about any of our coding systems, except to suggest that understanding how surrogate measures quantitatively translate into impacts, or how they should be weighted against each other, is an important area of research. As Rojstaczer and colleagues (2002) recently pointed out, our understanding of the global environmental impact of human beings is in its infancy, and therefore all measures should be considered cautiously. However, we also need to be aware that, though we don't understand everything about human influence on nature, we understand enough to be concerned.

In the near term, one avenue for refining our understanding of the human footprint is to study human influence at regional, national, and local levels. By restricting the area of interest, scientists can use more accurate and detailed datasets; modify the coding functions to respect regional, cultural, and biological differences; and define normalization criteria in ways appropriate for local conservation and management goals. The methods of defining the human footprint and the last of the wild are general and can be applied locally as well as globally to understand where nature may be most pressed and how that pressure may be released.

Implications for conservation practice

The human footprint and last of the wild should give us all pause as we consider our relationship to nature and the types of conservation efforts that we might pursue in the 21st century. This analysis indicates that conservation today proceeds in the context of dramatic, and in some places overwhelming, human influence. For most ecosystems, the greatest near-term threats are from direct human activities like those measured by the human footprint: transformation of land for agriculture and for suburban and urban development, direct

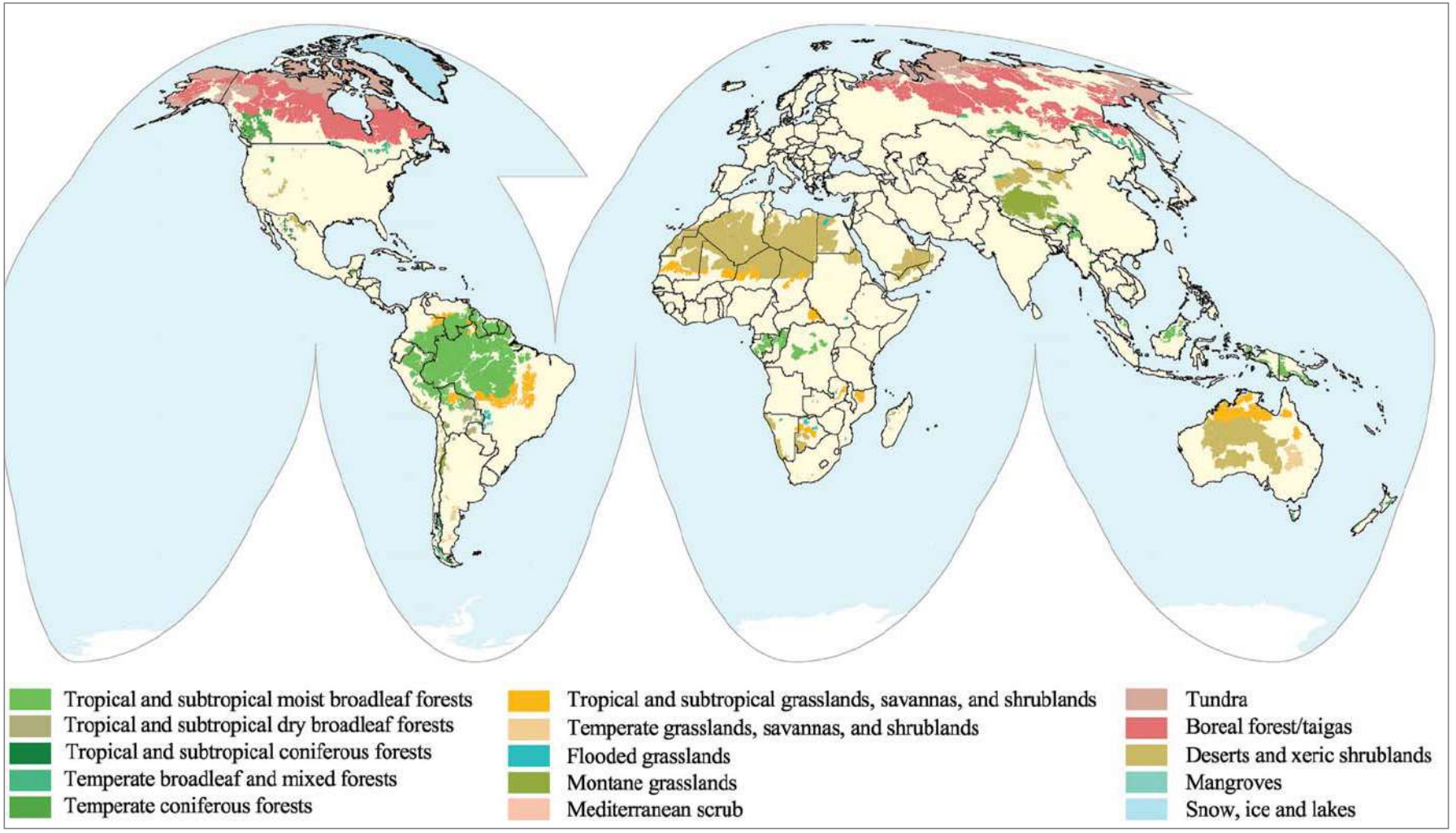


Figure 5. The "last of the wild," showing the ten largest "10% wildest cutoff" areas by biome and realm on the land surface. The full list is available at **www.wcs.org/humanfootprint; *geographic data is available at* www.ciesin.columbia.edu/wild_areas/.**

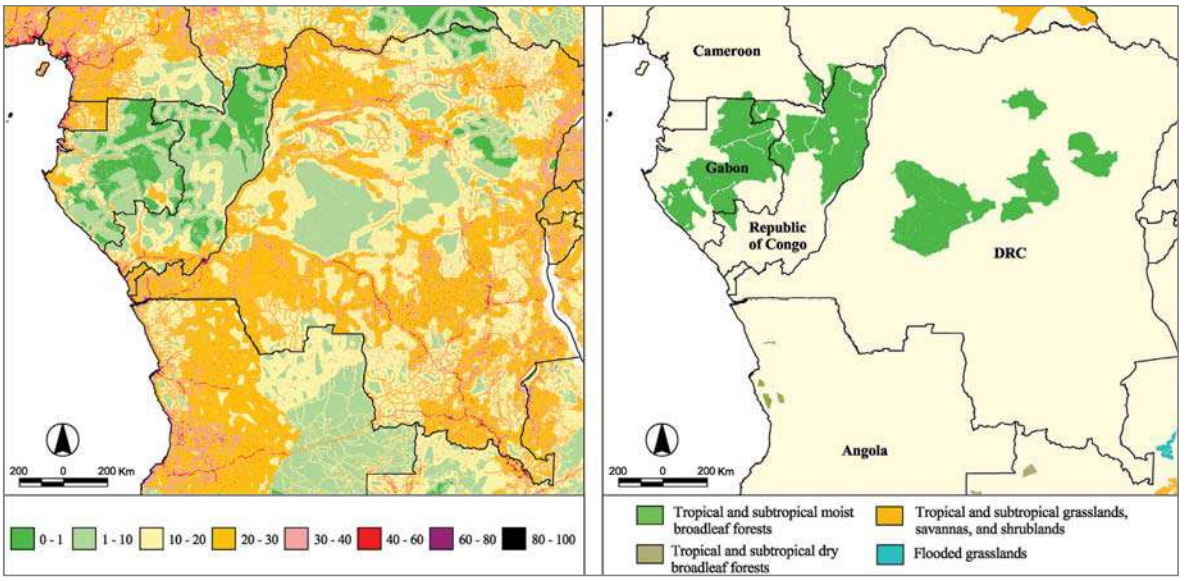


Figure 6. The human footprint and the last of the wild in Central Africa.

effects of roads and indirect effects of the access that roads afford, a power infrastructure that not only pollutes and modifies the climate but also enables extensive land transformation and road construction, and, ultimately, greater consumption of resources by an increasing human population (6 billion now and estimated to be 8 billion by 2020; UN Population Division 1993). Although not a complete catalog of conservation challenges, the human footprint provides an important basis for understanding conservation efforts on a global scale.

The human footprint permits us to organize conservation efforts along an axis of human influence. The kinds of conservation actions that are possible and the types of conservation targets that are available will often depend on the intensity of human influence. Where human influence is high, conservation will be limited in terms of the kinds and numbers of conservation targets available (for example, elk, cougar, and wolves have already been extirpated from the northeast United States). Conservation practice will typically focus on restoring ecosystems, reconnecting habitat fragments, and reintroducing extirpated species in landscapes cumulatively influenced by roads, human land uses, and high human population density. Where human influence is low (e.g., last-of-the-wild areas), a wider range of conservation targets and actions may be possible. These targets and actions could include creating and managing areas of limited human use (i.e., protected areas) and working with relatively smaller populations of local people and their institutions to moderate the outcomes of human influence, while maintaining existing conservation targets, as in Central Africa. Intermediate levels of human influence lend themselves to mixed strategies of preservation, conservation, and restoration, which are most efficiently planned at landscape or regional scales (Noss 1983, Sanderson et al. 2002). The cumulative nature of the human footprint means that, in areas

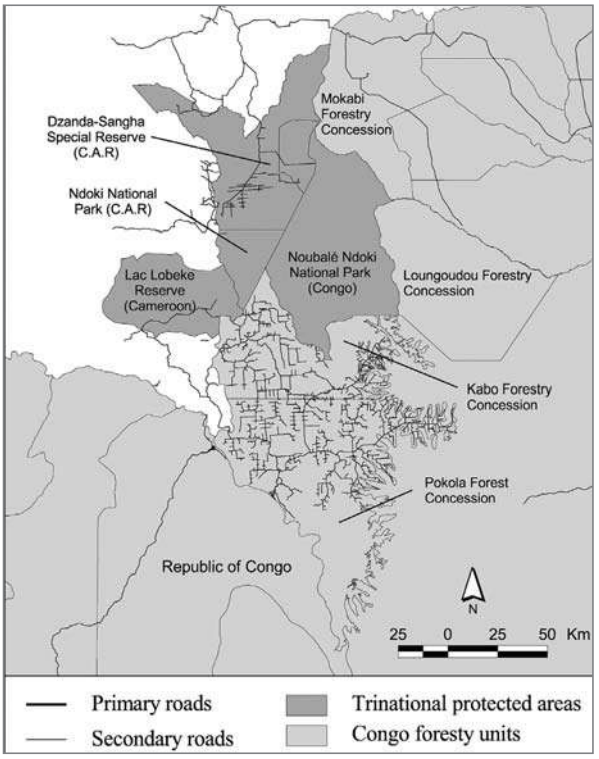


Figure 7. The Ndoki-Likouala Landscape Conservation Area in the trinational region of the Republic of Congo, Cameroon, and Central African Republic (C.A.R.). Primary roads, like those that are used to map the human footprint, are shown as a thick line. Most conservation threats in the region are a result of access along secondary roads, however, which are shown as thin lines and are not currently captured by global datasets. Roads data are courtesy of Frederic Glannaz (2001), Congolese Industrielle des Bois, northern Congo.

Table 2. Summary of the human influence index scores by realm and biome.

Realm	Biome	Area (km^2)	Minimum	Maximum	Mean	Standard deviation	10% wildest cutoff
Afro-tropical	Tropical and subtropical moist broadleaf forests	3,487,709	0	60	12.42	6.47	6
Afro-tropical	Tropical and subtropical dry broadleaf forests	189,751	1	37	11.11	5.57	5
Afro-tropical	Tropical and subtropical grasslands, savannas, and shrublands	13,983,895	0	60	11.81	5.95	6
Afro-tropical	Temperate grasslands, savannas, and shrublands	25,615	1	36	13.12	5.14	5
Afro-tropical	Flooded grasslands	458,499	0	54	11.59	5.41	5
Afro-tropical	Montane grasslands	863,265	0	56	16.20	5.37	6
Afro-tropical	Mediterranean scrub	93,732	0	60	15.85	7.86	6
Afro-tropical	Deserts and xeric shrublands	2,398,645	0	56	9.07	5.87	6
Afro-tropical	Mangroves	74,585	2	60	20.10	6.30	8
Australia–Asia Pacific	Tropical and subtropical moist broadleaf forests	1,156,438	0	50	10.88	5.83	5
Australia–Asia Pacific	Tropical and subtropical dry broadleaf forests	87,813	4	44	18.19	5.07	8
Australia–Asia Pacific	Temperate broadleaf and mixed forest	733,539	0	64	12.89	7.81	6
Australia–Asia Pacific	Tropical and subtropical grasslands, savannas, and shrublands	2,164,911	0	54	3.71	3.85	5
Australia–Asia Pacific	Temperate grasslands, savannas, and shrublands	629,594	0	50	6.32	6.19	5
Australia–Asia Pacific	Montane grasslands	67,639	0	32	7.03	3.56	3
Australia–Asia Pacific	Mediterranean scrub	803,405	0	64	9.37	6.77	6
Australia–Asia Pacific	Deserts and xeric shrublands	3,572,106	0	64	2.40	3.21	5
Australia–Asia Pacific	Mangroves	26,592	2	32	9.22	3.23	5
Indo–Malay	Tropical and subtropical moist broadleaf forests	5,395,598	0	60	17.60	7.23	6
Indo–Malay	Tropical and subtropical dry broadleaf forests	1,528,071	2	58	19.89	5.99	8
Indo–Malay	Tropical and subtropical coniferous forests	96,028	5	50	17.65	4.84	10
Indo–Malay	Temperate broadleaf and mixed forest	148,763	0	46	13.63	6.67	5
Indo–Malay	Temperate coniferous forests	64,075	0	46	15.47	7.67	5
Indo–Malay	Tropical and subtropical grasslands, savannas, and shrublands	34,681	14	52	22.54	5.84	18
Indo–Malay	Flooded grasslands	27,855	0	48	13.60	6.72	5
Indo–Malay	Montane grasslands	4,337	4	34	17.43	4.90	7
Indo–Malay	Deserts and xeric shrublands	1,085,536	4	56	21.25	6.12	9
Indo–Malay	Mangroves	114,232	4	54	21.11	5.94	9
Neotropical	Tropical and subtropical moist broadleaf forests	9,226,889	0	64	8.04	7.74	6
Neotropical	Tropical and subtropical dry broadleaf forests	1,779,363	0	60	12.63	8.08	6
Neotropical	Tropical and subtropical coniferous forests	321,948	1	56	17.24	5.48	7
Neotropical	Temperate broadleaf and mixed forest	395,543	0	56	9.87	6.82	6
Neotropical	Tropical and subtropical grasslands, savannas, and shrublands	3,410,947	0	64	10.66	6.86	6
Neotropical	Temperate grasslands, savannas, and shrublands	1,636,497	0	64	11.22	7.80	6
Neotropical	Flooded grasslands	323,357	0	64	11.72	7.86	6
Neotropical	Montane grasslands	811,134	0	46	8.47	5.44	5
Neotropical	Mediterranean scrub	148,516	0	64	17.91	8.17	6
Neotropical	Deserts and xeric shrublands	1,168,615	0	64	15.96	6.12	6
Neotropical	Mangroves	121,156	1	62	19.63	7.89	7

Table 2. (continued)

Realm	Biome	Area (km^2)	Minimum	Maximum	Mean	Standard deviation	10% wildest cutoff
North America	Tropical and subtropical dry broadleaf forests	51,009	0	54	14.71	8.41	6
North America	Tropical and subtropical coniferous forests	288,921	0	46	10.28	5.31	5
North America	Temperate broadleaf and mixed forest	2,838,104	0	68	17.79	9.50	7
North America	Temperate coniferous forests	2,303,350	0	68	10.28	8.77	7
North America	Boreal forests and taigas	5,091,934	0	60	2.07	3.89	6
North America	Tropical and subtropical grasslands, savannas, and shrublands	80,595	0	72	21.86	9.73	7
North America	Temperate grasslands, savannas, and shrublands	3,092,350	0	68	13.75	8.27	7
North America	Tundra	4,238,074	0	50	1.88	2.58	5
North America	Mediterranean scrub	121,268	0	64	16.93	11.45	6
North America	Deserts and xeric shrublands	2,322,298	0	64	9.55	6.52	6
North America	Mangroves	5,004	5	52	19.20	5.96	10
Palearctic	Tropical and subtropical moist broadleaf forests	509,896	4	52	18.03	4.83	9
Palearctic	Temperate broadleaf and mixed forest	8,663,974	0	68	20.94	7.66	7
Palearctic	Temperate coniferous forests	1,701,438	0	60	11.64	7.89	6
Palearctic	Boreal forests and taigas	9,945,699	0	68	5.13	6.06	7
Palearctic	Temperate grasslands, savannas, and schrublands	4,712,174	0	64	15.13	7.20	6
Palearctic	Flooded grasslands	334,501	0	60	17.13	9.67	6
Palearctic	Montane grasslands	3,373,792	0	46	7.69	6.25	5
Palearctic	Tundra	4,040,179	0	54	2.36	3.71	5
Palearctic	Mediterranean scrub	2,103,829	0	60	17.87	7.22	6
Palearctic	Deserts and xeric shrublands	17,324,845	0	60	6.21	6.20	6

Note: The 10% wildest cutoff score designates last-of-the-wild areas.

with intermediate levels of influence, often one factor of influence (e.g., roads or land use) may predominate and thus conservation measures should be targeted toward that factor. It is possible to imagine conservation strategies mapped out for different parts of the human influence continuum, based on the hypothesis that if human influence increases as it has for the last 100 years, conservation strategies will increasingly shift from preservation to restoration—with the concomitant increases in cost, time, and difficulty—much as they already have in the United States and Europe.

Meanwhile, we need to be careful not to read the maps of the human footprint and the last of the wild too literally. Although there is no doubt that the human footprint expresses an important perspective on the world, it is also true that, in its details, it contains inaccuracies (as noted above), and it is mapped at a scale coarser than most conservation efforts. For example, deep in the Central African forests, the Wildlife Conservation Society (WCS) works with the government of the Republic of Congo to conserve Nouabalé-Ndoki National Park (figure 7). The thicker roads shown on this map are those that appear in the data layer of roads in the human footprint, but it is the finer network of logging roads that most concerns WCS conservationists. Successful conservation of the Nouabalé-Ndoki forests and the animals that live there requires having biological and social scientists on the ground to monitor the real levels of impact, as well as to determine who is influencing the ecology of an area and how to work with them to mitigate the negative consequences of human activity. The human footprint as it exists today is too inexact to inform us much at the scale of site-based conservation action, but it does provide a way of seeing our relationship to the planet that connects local decisions to their worldwide impacts.

Conclusions

The global extent of the human footprint suggests that humans are stewards of nature, whether we like it or not. The long-term impact of human influence, positive or negative, benign or catastrophic, depends on our willingness to shoulder responsibility for our stewardship. Conservation organizations and biological scientists have demonstrated surprising solutions that allow people and wildlife to coexist, if people are willing to apply their natural capacity to modify the environment to enhance natural values, not degrade them, while making their living. An important step in generating the willingness to use human capacity for,

rather than against, nature is to acknowledge the human footprint.

Part of that acknowledgment is a commitment to conserving the last of the wild—those few places, in all the biomes around the globe, that are relatively less influenced by human beings—before they are gone. In large part, this conservation effort will require legal, enforced limits on human uses of natural areas and the knowledge and capacity to manage well in all of the world's biomes. It will also require a willingness to forgo exhausting the last portions of natural ecosystems for short-term economic gain, because once they are gone, it will be very difficult and expensive to bring them back, if they can be brought back at all. To conserve the last of the wild, we must invest our talent and our resources to reclaim a more balanced relationship with the natural world.

Meanwhile, biological scientists, policymakers, and conservationists need to understand and conserve across the gradient of human influence (Margules and Pressey 2000, Miller and Hobbs 2002). The maps presented here provide a framework for understanding conservation efforts in the context of relative differences in human influence. It is possible to find portions of nature everywhere. Where we live in the New York City metropolitan area, magnificent hawk migrations have returned in the fall, though populations still show the effects of past insults, including "varmint shoots" and DDT. Native species continue to survive in small pockets of forest and salt marsh, despite having to contend with trash and competition from invasive species. The waters of the Hudson River and the harbor are cleaner than they have been in years, thanks to legal protections and conscientious local and upstream communities, but they still lack the abundance of fish and other life that once thrived there. We have some solutions, and nature, fortunately, is often resilient if given half a chance.

But the most important acknowledgment is for human beings, as individuals, institutions, and governments, to choose to moderate their influence in return for a healthier relationship with the natural world. We need to reinterpret the colors of the human footprint, so that red signifies where nature is most nurtured and green where wildness thrives. It is possible, and we join with our colleagues in the scientific community to suggest that it is also necessary, to transform the human footprint and save the last of the wild.

Acknowledgments

The authors would like to acknowledge our colleagues at the Wildlife Conservation Society and CIESIN (Center for International Earth Science Information Network) for their many helpful comments and suggestions; we specifically thank Greg Aplet, Robert DeCandido, Lee Hannah, John Morrison, Sharon Miller, Michael Soulé, Janice Thomson, Woody Turner, Mark Wilbert, two anonymous reviewers, and the editors for their critical comments on earlier versions of this manuscript. We would also like to acknowledge financial support from CERC (Center for Environmental Research and Conservation) at Columbia University, and the Prospect Hill Foundation, and software support from ESRI (Environmental Systems Research Institute) Conservation Program.

References cited

Aplet G, Thomson J, Wilbert M. 2000. Indicators of wildness: Using attributes of the land to assess the context of wilderness. In Cole DN, McCool SF, eds. Proceedings: Wilderness Science in a Time of Change. Ogden (UT): USDA Forest Service, Rocky Mountain Research Station. Proc. RMRS-P-15.

Bennett CF. 1975. Man and Earth's Ecosystems. New York: Wiley.

Brashares JS, Arcese P, Sam MK. 2001. Human demography and reserve size predict wildlife extinction in West Africa. Proceedings of the Royal Society of London B 268: 6.

[CIESIN] Center for International Earth Science Information Network, Columbia University; International Food Policy Research Institute; World Resources Institute. 2000. Gridded Population of the World (GPW). Ver. 2. Palisades (NY): CIESIN. (29 August 2002; *http://sedac.ciesin.columbia.edu/plue/gpw/)*

Chapin FS, et al. 2000. Consequences of changing biodiversity. Nature 405: 234–242.

Cincotta RP, Engelman R. 2000. Nature's Place: Human Population Density and the Future of Biological Diversity. Washington (DC): Population Action International.

Crooks KR, Soulé ME. 1999. Mesopredator release and avifaunal extinctions in a fragmented system. Nature 400: 563–566.

Elvidge CD, Baugh KE, Kihn EA, Kroehl HW, Davis ER, Davis DW. 1997a. Relation between satellite-observed visible-near infrared emissions, population, economic activity and electric power consumption. International Journal of Remote Sensing 18: 1373–1379.

Elvidge CD, Baugh KE, Kihn EA, Kroehl HW, Davis ER. 1997b. Mapping city lights with nighttime data from the DMSP Operational Linescan System. Photogrammetric Engineering and Remote Sensing 63: 727–734.

[FAO] Food and Agriculture Organization. 2000. Global Agro-Ecological Zones. Ver. 1.0. [CD-ROM] Land and Water Digital Media Series 11. Rome: FAO and International Institute for Applied Systems Analysis.

Forester DJ, Machlis GE. 1996. Modeling human factors that affect the loss of biodiversity. Conservation Biology 10: 1253–1263.

Forman RTT. 1995. Land Mosaics: The Ecology of Landscapes and Regions. Cambridge (United Kingdom): Cambridge University Press.

Forman RTT, Deblinger RD. 2000. The ecological road-effect zone of a Massachusetts (USA) suburban highway. Conservation Biology 14: 36–46.

Geist HJ, Lambin EF. 2002. Proximate causes and underlying driving forces of tropical deforestation. BioScience 52: 143–150.

Goudie AS. 1986. The Human Impact on the Natural Environment. Cambridge (MA): MIT Press.

Grumbine RE. 1990. Viable populations, reserve size, and federal lands management: A critique. Conservation Biology 4: 127–134.

Gucinski H, Furniss MJ, Ziemer RR, Brookes MH. 2001. Forest Roads: A Synthesis of Scientific Information. Portland (OR): USDA Forest Service, Pacific Northwest Research Station. General Technical Report PNW-GTR-509.

Hall C, Lindenberger D, Kümmel R, Kroeger T, Eichhorn W. 2001. The need to reintegrate the natural sciences with economics. BioScience 51: 663–673.

Hannah L, Lohse D, Hutchinson C, Carr JL, Lankerani A. 1994. A preliminary inventory of human disturbance of world ecosystems. Ambio 23: 246–250.

Hannah L, Carr JL, Lankerani A. 1995. Human disturbance and habitat: A biome-level analysis of a global data set. Biodiversity and Conservation 4: 128–155.

Harcourt AH, Parks SA, Woodroffe R. 2001. Human density as an influence on species/area relationships: Double jeopardy for small African reserves? Biodiversity and Conservation 10: 1011–1026.

Lalo J. 1987. The problem of road kill. American Forests 93: 50–52.

Lande R. 1998. Anthropogenic, ecological and genetic factors in extinction. Pages 29–51 in Mace GM, Balmford A, Ginsberg JR, eds. Conservation in a Changing World. Cambridge (United Kingdom): Cambridge University Press.

Laurance WF, Cochrane MA. 2001. Introduction: Synergistic effects in fragmented landscapes. Conservation Biology 15: 1488–1489.

Lesslie R, Malsen M. 1995. National Wilderness Inventory Handbook of Procedures, Content and Usage. 2nd ed. Canberra (Australia): Australian Government Publishing Service.

Loveland TR, Reed BC, Brown JF, Ohlen DO, Zhu J, Yang L, Merchant JW. 2000. Development of a global land cover characteristics database and IGBP DISCover from 1-km AVHRR data. International Journal of Remote Sensing 21: 1303–1330.

Lowdermilk WC. 1953. Conquest of the Land through Seven Thousand Years. Washington (DC): US Department of Agriculture. Agriculture Bulletin no. 99.

Malthus TR. 1798. An Essay on the Principle of Population. London: J. Johnson.

Margules CR, Pressey RL. 2000. Systematic conservation planning. Nature 405: 243–253.

Marsh GP. [1864] 1965. Man and Nature. Reprint. Cambridge (MA): Harvard University Press.

McCloskey MJ, Spalding H. 1989. A reconnaissance-level inventory of the amount of wilderness remaining in the world. Ambio 8: 221–227.

McNeill JR. 2000. Something New under the Sun: An Environmental History of the Twentieth Century World. New York: W. W. Norton.

Miller JR, Hobbs RJ. 2002. Conservation where people live and work. Conservation Biology 16: 330–337.

[NIMA] National Imagery and Mapping Agency. 1997. Vector Map Level 0 (VMAP0), ed. 003. Washington (DC): NIMA.

Newmark WD. 1987. Mammalian extinctions in western North American parks: A land-bridge perspective. Nature 325: 430–432.

Noss RF. 1983. A regional landscape approach to maintain diversity. BioScience 33: 700–706.

Olson DM, et al. 2001. Terrestrial ecoregions of the world: A new map of life on Earth. BioScience 51: 933–938.

Parks, SA, Harcourt, AH. 2002. Reserve size, local human density, and mammalian extinctions in US protected areas. Conservation Biology 16: 800–808.

Pauly D, Christensen V. 1995. Primary production required to sustain global fisheries. Nature 374: 255–257.

Peres CA, Terborgh J. 1995. Amazonian nature reserves: An analysis of the defensibility status of existing conservation units and design criteria for the future. Conservation Biology 9: 34–46.

Pimm SL. 2001. The World According to Pimm: A Scientist Audits the Earth. New York: McGraw-Hill.

Postel SL, Daily GC, Ehrlich PR. 1996. Human appropriation of renewable freshwater. Science 271: 785–788.

Redford KH. 1992. The empty forest. BioScience 42: 412–422.

Redford KH, Richter BD. 1999. Conservation of biodiversity in a world of use. Conservation Biology 13: 1246–1256.

Robinson JG, Bennett EL. 2000. Hunting for Sustainability in Tropical Forests. New York: Columbia University Press.

Rojstaczer S, Sterling SM, Moore NJ. 2001. Human appropriation of photosynthesis products. Science 294: 2549–2552.

———. 2002. Response to Haberl et al. Science 296: 1968.

Sanderson EW, Redford KH, Vedder A, Coppolillo PB, Ward SE. 2002. A conceptual model for conservation planning based on landscape species requirements. Landscape and Urban Planning 58: 41–56.

Soulé ME, Terborgh J. 1999. The policy and science of regional conservation. Pages 1–18 in Soulé ME, Terborgh J, eds. Continental Conservation: Scientific Foundations of Regional Reserve Networks. Washington (DC): Island Press.

Steffen W, Tyson P, eds. 2001. Global Change and the Earth System: A Planet under Pressure. Stockholm: International Geosphere-Biosphere Program.

Stevens WK. 1995. Miracle under the Oaks: The Revival of Nature in America. New York: Simon and Schuster.

Sutton P, Roberts D, Elvidge C, Meij H. 1997. A comparison of nighttime satellite imagery and population density for the continental United States. Photogrammetric Engineering and Remote Sensing 63: 1303–1311.

Terborgh J. 1999. Requiem for Nature. Washington (DC): Island Press.

Thomas WL. 1956. Man's Role in Changing the Face of the Earth. Chicago: University of Chicago Press.

Tilman D, Fargione J, Wolff B, D'Antonio C, Dobson A, Howarth R, Schindler D, Schlesinger WH, Simberloff D, Swackhamer D. 2001. Forecasting agriculturally driven global environmental change. Science 292: 281–284.

Trombulak SC, Frissell CA. 2000. Review of ecological effects of roads on terrestrial and aquatic communities. Conservation Biology 14: 18–30.

[UN Population Division] United Nations Department of Economic and Social Information and Policy Analysis (Population Division). 1993. World Population Prospects: The 1992 Revision. New York: United Nations.

[UNEP] United Nations Environment Programme. 2001. GLOBIO Global Methodology for Mapping Human Impacts on the Biosphere. Nairobi (Kenya): United Nations Environment Programme. Environment Information and Assessment Technical Report UNEP/DEWA/TR.01-3. (29 August 2002; *www.globio.info)*

Vitousek PM. 1997. Human domination of Earth's ecosystems. Science 277: 494–499.

Vitousek PM, Ehrlich PR, Ehrlich AH, Matson PA. 1986. Human appropriation of the products of photosynthesis. BioScience 36: 368–373.

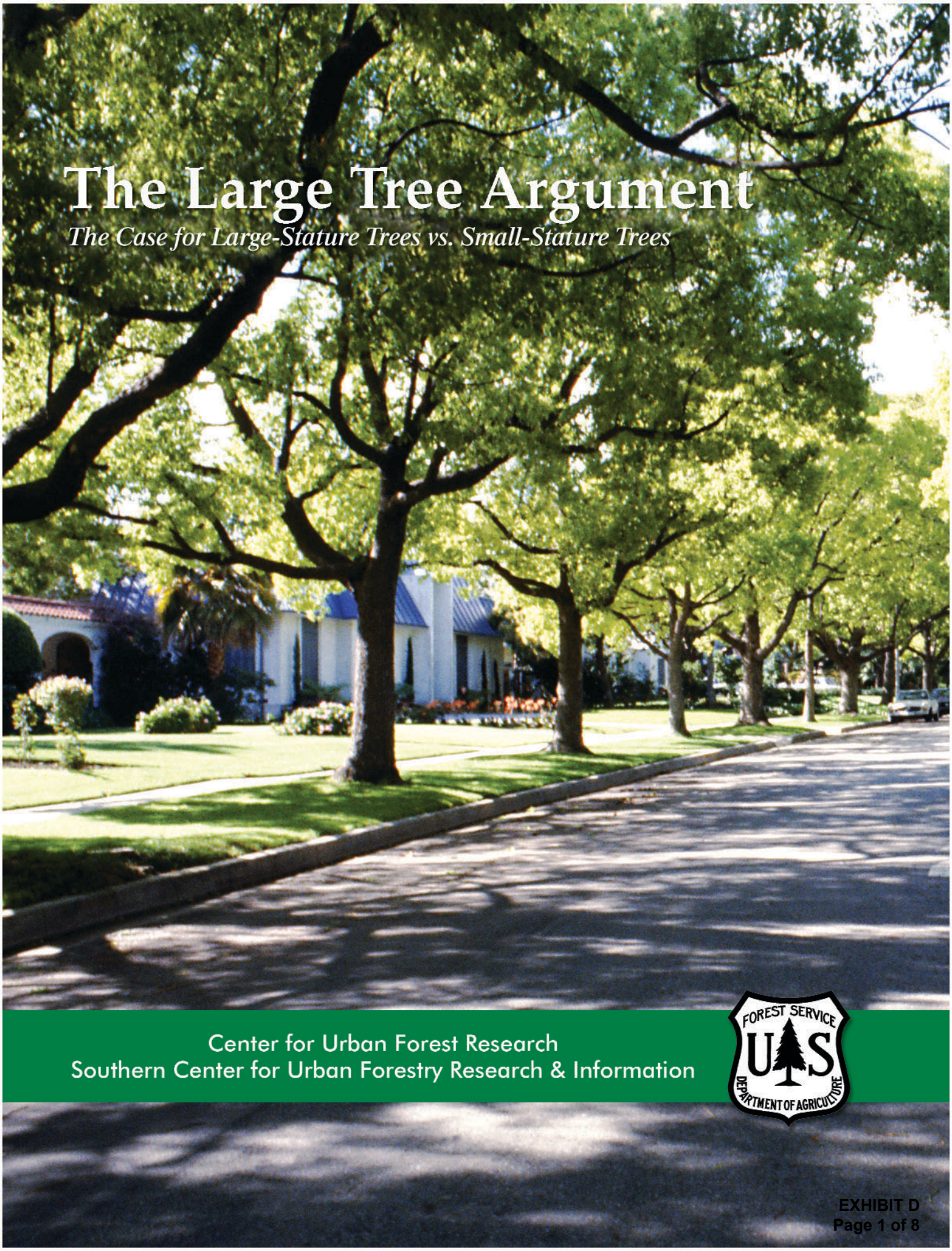
Wackernagel M, Rees W. 1996. Our Ecological Footprint; Reducing Human Impact on the Earth. Gabriola Island, British Columbia (Canada): New Society Publishers.

Wilkie D, Shaw E, Rotberg F, Morelli G, Auzel P. 2000. Roads, development and conservation in the Congo Basin. Conservation Biology 14: 1614–1622.

Wilson EO. 2002. The Future of Life. New York: Alfred A. Knopf.

Yaroshenko AY, Potapov PV, Turubanova SA. 2001. The last intact forest landscapes of northern European Russia. Moscow: Greenpeace Russia. (29 August 2002; *www.globalforestwatch.org/english/russia/maps.htm)*

EXHIBIT D



The Large Tree Argument

The Case for Large-Stature Trees vs. Small-Stature Trees

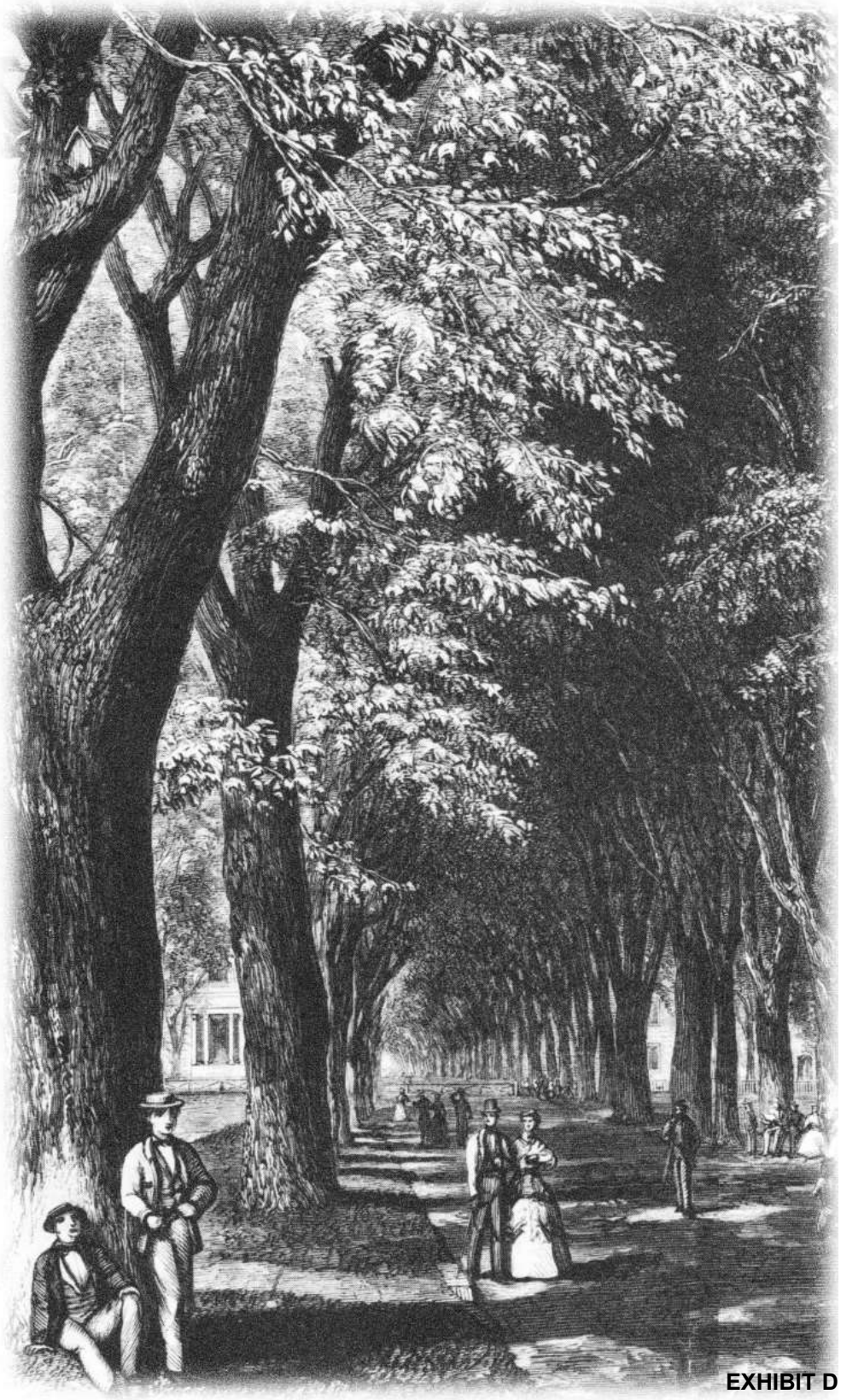
Center for Urban Forest Research
Southern Center for Urban Forestry Research & Information

FOREST SERVICE
US
DEPARTMENT OF AGRICULTURE

Why did we like elm trees so much?

Large stately elm trees once graced many communities throughout the US. But now they are gone. Why were entire communities so disappointed when they lost their elm trees to Dutch elm disease several decades ago?

People had a sense that these large trees were important to them, their family, and their community. And this was long before we quantified the benefits of trees. Now we have scientific evidence for what these people knew decades ago.



USDA US Department of Agriculture

USDA Forest Service

Center for Urban Forest Research
Pacific Southwest Research Station
USDA Forest Service

Southern Center for Urban Forestry Research & Information
Southern Research Station
USDA Forest Service

Urban & Community Forestry
State & Private Forestry
USDA Forest Service

Large trees pay us back

We now know that, dollar for dollar, large-stature trees (see sidebar definition p.6) deliver big savings and other benefits we can't ignore. Small-stature trees like crape myrtle deliver far fewer benefits. In fact, research at The Center for Urban Forest Research shows that their benefits are up to eight times less.

Compared to a small-stature tree, a strategically located large-stature tree has a bigger impact on conserving energy, mitigating an urban heat island, and cooling a parking lot. They do more to reduce stormwater run off; extend the life of streets; improve local air, soil and water quality; reduce atmospheric carbon dioxide; provide wildlife habitat; increase property values; enhance the attractiveness of a community; and promote human health and well being. And when we use large-stature trees, the bottom-line benefits are multiplied. When it comes to trees, size really does matter.

Don't forget the established "Old Guard"

We can't forget the already-established trees. These older trees provide immediate benefits. The investment that community leaders made 30, 40, 50 years ago is producing dividends today. Dr. McPherson, Director of the Center for Urban Forest Research, points out that "since up-front costs to establish these large-stature trees have already been made, keeping these trees healthy and functional is one of the best investments communities can make."

What do you lose if you don't plant large trees?

Municipal tree programs are dependent on tax-payer supported funding. Therefore, communities must ask themselves, are large-statured trees worth the price to plant and care for? Our research has shown that benefits of large-statured trees far outweigh the costs of caring for them, sometimes as much as eight to one. The big question communities need to ask is: can we afford not to invest in our trees? Are we willing to forego all of these benefits? Or, would we rather make a commitment to provide the best possible care and management of our tree resource and sustain these benefits for future generations.

Costs vs benefits

In most areas of the country, communities can care for their largest trees for as little as $13 per year, per tree. And, each tree returns an average of $65 in energy savings, cleaner air, better managed stormwater, extended life of streets, and higher property values. Even at maturity, small-stature trees do not come close to providing the same magnitude of benefits.

A hypothetical example

A few years ago, the community of Greentree was faced with a budget crisis and decided to save money by downsizing its community forest—planting a majority of small-stature trees like crape myrtle in favor of large-stature trees like ash and even replacing large trees with smaller ones (see below). It made choice X. Unfortunately, this is not an uncommon story in communities today. But the real question is, what did they give up in return, and was downsizing a wise choice?

Table 1: Large trees vs small trees

The city of Greentree chose planting scenario X. By year 20 it was already a $60,000 annual mistake (see discussion above).

		CHOICE X		CHOICE Y	
	Avg. Ann. Benefit Avg. Ann. Cost	# Trees	Total Benefit Total Cost	# Trees	Total Benefit Total Cost
Large Trees	$65.18 $13.72	259	$16,882.00 $3,553.00	1,693	$110,350.00 $23,228.00
Medium Trees	$36.04 $6.87	753	$27,138.00 $5,173.00	753	$27,138.00 $5,173.00
Small Trees	$17.96 $6.23	1,693	$30,406.00 $10,547.00	259	$4,652.00 $1,614.00
Total Trees		2,705		2,705	
Total Benefits Total Costs			$74,426.00 $19,273		$142,140.00 $30,015.00
Annual Net Value to Community			$55,153.00		$112,125.00

Note: Each "tree" represents 259 trees planted.

In this case, the city decided that planting 1693 small-stature trees and only 259 large-stature trees would be a good budget-cutting strategy. Over the short term this may save the city a little money. But over the long term they will have decidedly fewer benefits and a decreased quality of life. City elected officials failed to consider what the city would be giving up over the life of those trees.

Will people want to live, work, recreate, do business, and shop in this community? And will the new trees provide all of the benefits that the residents seek—energy conservation, clean air, clean water, attractive surroundings, and enhanced real estate values. The answer is a resounding NO! The growth of these trees was modeled by The Center for Urban Forest Research over 40 years. By year 20, the decision-makers had already made nearly a $60,000 dollar annual mistake.

Choice Y is clearly the way to go to maximize their return on budget dollars. The model shows that once the trees are mature the community will receive an annual return on investment of nearly $60,000 over choice X. Plus, the community will look quite different in the future and be a healthier and safer place to live.

Is it possible to recreate the past ?

We may never have the arching canopies we once had with the stately elms of a few decades ago. But, we can still achieve large, extensive and functional canopies and reap all the benefits. It will take planting large-stature trees in as many appropriate places as possible while creating the best possible site that maximizes space and allows for adequate exchange of gases and water. And yes, it is possible!

Editors Note

We recognize that on some restricted sites small-stature trees may be the best choice. However, let's not succumb to the limited space argument so easily. We need to continue to fight for more space for trees in every new project and every retrofit. The bigger the tree, the bigger the benefits and, ultimately, the better our quality of life.

The Future Without Large Trees

Cities that are using small-stature trees to reduce costs may achieve some short-term savings, but over the long term, they have destined themselves to a future with fewer and fewer benefits as large-statured trees are replaced with smaller ones.

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Fact Sheet 2 - ©2004 Matton Images

What are trees worth?

The value of tree benefits varies widely, but can be as much as $80 to $120 per tree per year for a large tree. Small trees that never get very large, like the crape myrtle, provide not much more than $15 in benefits on average. In some cases they are a net loss to communities after the costs are subtracted. The Center for Urban Forest Research has studied large, medium, and small trees in a number of locations throughout the West and found that, on average, mature large trees deliver an annual net benefit two to six times greater than mature small trees:

Mature tree size
The approximate tree size 40 years after planting.

Relative Size at Maturity:

Small-stature
Less than 25 feet tall and wide with trunk diameters less than 20 inches.

Medium-stature
25 - 40 feet tall and wide with trunk diameters 20 - 30 inches.

Large-stature
Greater than 40 feet tall and wide with trunk diameters commonly over 30 inches.

Large Tree

- Total benefits/year = $55
- Total costs/year = $18
- Net benefits/year = $37
- Life expectancy = 120 years
- Lifetime benefits = $6,600
- Lifetime costs = $2,160
- Value to community = $4,440

Medium Tree

- Total benefits/year = $33
- Total costs/year = $17
- Net benefits/year = $16
- Life expectancy = 60 years
- Lifetime benefits = $1,980
- Lifetime costs = $1,020
- Value to community = $960

Small Tree

- Total benefits/year = $23
- Total costs/year = $14
- Net benefits/year = $9
- Life expectancy = 30 years
- Lifetime benefits = $690
- Lifetime costs = $420
- Value to community = $270

—hypothetical case using data for trees at year 30, projected to life expectancy from McPherson, E.G.; et. al. 2003. Northern mountain and prairie community tree guide: benefits, costs and strategic planting. Center for Urban Forest Research, Pacific Southwest Research Station, USDA Forest Service. 92p.

Fact Sheet: Making the Case for Large Trees

Large-stature trees need to be "marketed" as maximizing urban benefits:

- Cooling the air
- Shading paved surfaces
- Improving air and water quality
- Preventing water runoff and soil erosion
- And enhancing residential and commercial value

Even with these well-documented benefits, the challenges for increasing the number of large trees are consistently related to construction and preservation issues, space and persuading the community. Increasing the number of larger trees requires a combination of strategies that address these obstacles.

Construction and preservation obstacles

Consider both the preservation and planting of large trees in planning and design. Preserving large trees during construction:

- Start early in the process.

  Designate which trees need to be preserved. Larger more mature trees (that are in good condition) provide more value and benefits than smaller ornamental trees.

- Advise construction management of project schedules related to season-specific activities such as root pruning, fertilization, and insect control.

- Educate construction crews and the community about their role in preserving trees:
  - Soil compaction
  - Trunk and branch damage
  - Over or under watering
  - Chemical spills

- Pay careful attention to accidental damage, utility activities, or onsite crews that may impact the root system or soil composition.

- Accommodate utility lines near the critical root zone (CRZ), especially for larger trees by:
  - Tunneling under the tree root mat to install utility lines. This does little damage compared to trenching through the roots.
  - Use a pneumatic excavating tool for excavation work that must happen inside the CRZ. This tool can remove soil around tree roots without harming them.

- At the end of construction, plan for additional care as part of a recovery phase including watering, insect and disease control, and pruning.

- adapted from work by Charlotte King, President, Snowden & King Marketing Communications

Finding space

Accommodating larger trees is an ongoing challenge that is complicated by the competing needs for utility lines and impervious surfaces. Here are a few suggestions to address the issue of space during the planning and design phase:

- Recommend planting large-stature trees as part of transportation corridors whenever possible.
- Tree roots generally stay in the upper 18 inches of soil; therefore, ensure that pipes such as gas, electric, communication and water are installed deeper and use the space above for trees.
- A new publication, "Reducing Infrastructure Damage by Tree Roots: a Compendium of Strategies," clearly outlines ways to install large trees in limited space so they coexist in harmony with hardscape. It is available through the Western Chapter ISA at http://www.wcisa.net.

Persuading the Community

You are the tree expert, and the public is looking to you for guidance and best practices that they can rely on for critical decisions related to budgeting, construction, esthetics, and long-term environmental impact. You also have an opportunity to talk with them about selection, preservation, and critical maintenance of trees, and persuade them that the benefits of larger trees far outweigh the costs:

1. Explain the benefits of the larger trees and point out the obstacles. Discuss ways to mitigate these obstacles as described above in terms of construction, preservation, or space.

2. Play an active role in the construction process to limit the damage done to trees, and identify post-construction tree care. Make sure the community understands the ongoing tree care requirements.

3. Increase your "marketing expertise" in leveraging the value of community partners, media recognition, or historic preservation status. A little recognition combined with community education can make a big difference in changing the commitment to including larger trees in community projects.

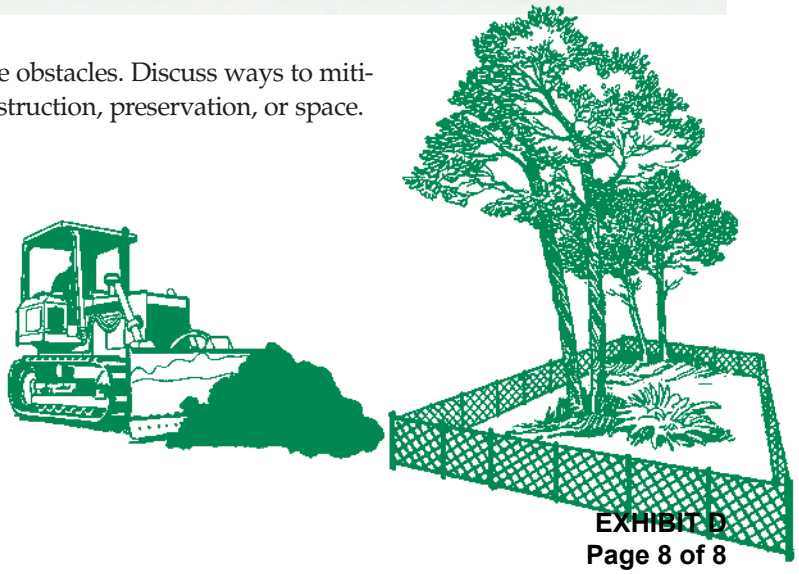

EXHIBIT E

DEPARTMENT OF
CITY PLANNING
200 N. SPRING STREET, ROOM 272
LOS ANGELES, CA 90012-4801

CULTURAL HERITAGE COMMISSION

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LISA M. WEBBER, AICP
DEPUTY DIRECTOR
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http://planning.lacity.org

August 18, 2020

Los Angeles City Council
c/o Office of the City Clerk
City Hall, Room 395
Los Angeles, CA 90012

Attention: PLUM Committee

Dear Honorable Members:

STIRES STAIRCASE BUNGALOW COURT; 1251-1259 WEST SUNSET BOULEVARD; CHC-2020-896-HCM; ENV-2020-897-CE; CD-1

At its meeting of **August 6, 2020**, the Cultural Heritage Commission took the actions below to include the Stires Staircase Bungalow Court in the list of Historic-Cultural Monuments, subject to adoption by the City Council:

1. **Determined** that the proposed designation is categorically exempt from the California Environmental Quality Act (CEQA), pursuant to Article 19, Section 15308, Class 8 and Article 19, Section 15331, Class 31 of the State CEQA Guidelines;
2. **Determined** that the property conforms with the definition of a Monument pursuant to Section 22.171.7 of the Los Angeles Administrative Code;
3. **Recommended** that the City Council consider the Stires Staircase Bungalow Court for inclusion in the list of Historic-Cultural Monuments; and
4. **Adopted** the attached Findings as amended by the Commission.

The Commission vote was as follows:

Moved:	Kennard
Seconded:	Milofsky
Ayes:	Barron
Nays:	Buelna, Kanner

Vote: **3 – 2**

James K. Williams, Commission Executive Assistant II
Cultural Heritage Commission

The Cultural Heritage Commission would appreciate your inclusion of the subject property to the list of Historic-Cultural Monuments.

Time for Council to Act: The Commission action is hereby transmitted to the City Council for consideration. Pursuant to Section 22.171.10(f) of the Los Angeles Administrative Code, the Council may approve or disapprove in whole or in part an application or initiation for a proposed designation of a Monument. The Council shall act in 90-days of the public hearing held before the Commission on the proposed designation. The City Council may unilaterally extend the 90-day time limit to act for a maximum of 15 days for good cause. With written consent of the owner, the time for the City Council to act may be extended by up to an additional 60 days. If the Council does not act on the application or initiation within this specified time limit, the application or initiation to designate a Monument shall be deemed to have been denied.

Enclosure: Amended Findings, Staff Report, Categorical Exemption, Mailing List

STIRES STAIRCASE BUNGALOW COURT
1251-1259 West Sunset Boulevard
CHC-2020-896-HCM
ENV-2020-897-CE

AMENDED FINDINGS

(Amended by the Cultural Heritage Commission on August 6, 2020)

- The Stires Staircase Bungalow Court "exemplifies significant contributions to the broad cultural, economic or social history of the nation, state, city or community" as an example of 1920s working class housing developed adjacent to the Sunset Boulevard streetcar line.

- The Stires Staircase Bungalow Court "is associated with the lives of historic personages important to national, state, city, or local history" as a property owned by Lilly Bennett Baldwin Howard, who became one of the first female bank executives to make her fortune in the banking industry.

- The Stires Staircase Bungalow Court "embodies the distinctive characteristics of a style, type, period, or method of construction" as an excellent example of a hillside bungalow court.

DISCUSSION OF FINDINGS

The Stires Staircase Bungalow Court meets all three of the Historic-Cultural Monument criteria.

The subject property "exemplifies significant contributions to the broad cultural, economic or social history of the nation, state, city or community" as an example of 1920s working class housing developed adjacent to the Sunset Boulevard streetcar line. Throughout the 1920s and 1930s, there was a massive population influx into Los Angeles, resulting in a construction boom and spread of the city in all directions. The subject property was built along the Pacific Electric streetcar line on Sunset Boulevard in response to the need for housing in the area, most likely for employees of the nearby film studios. The streetcar line servicing Sunset Boulevard was in use in the area from 1901 until the late 1940s, and the period of significance for streetcar suburbanization in the city spans from 1888 to 1933, encompassing the 1922 construction of the subject property. The streetcar line played a key role in laying the groundwork for the future growth of the area. At a time when automobiles were ascending as the primary form of transportation, the subject property was designed without driveways, garages, or vehicular access, making the residents dependent on the streetcar for transportation. The subject property represents railroad settlement at the peak of rail access in Los Angeles.

The subject property also "is associated with the lives of historic personages important to national, state, city, or local history" as a property owned by Lilly Bennett Baldwin Howard, who became one of the first female bank executives to make her fortune in the banking industry. Baldwin Howard, wife of Elias Jackson "Lucky" Baldwin, owned the subject property from 1929 until her death in 1938, although it remained in the name of her estate until 1950. Following Lucky Baldwin's death in 1909, Baldwin Howard flourished as her own financial manager, and became a millionaire in her own right by investing in the banking business. During her banking career, she served as President of the Hollywood State Bank and Broadway State Bank; Vice President of the First National Bank of Pasadena, and owner of the Continental Bank (later part of Bank of America). When she passed away her *New York Times* obituary called her a "financial genius," noting that she had "guided the destiny of half a dozen banks."

Additionally, the Stires Staircase Bungalow Court "embodies the distinctive characteristics of a style, type, period, or method of construction" as an excellent example of a hillside bungalow court. By the 1920s, the intense demand for higher density housing led to innovative multi-family property designs that assimilated into the low-density environment that characterized the city. The bungalow court was the earliest iteration of the resulting low-rise, high density courtyard apartment building. However, much of the early development in Los Angeles occurred near the hills surrounding downtown, many courtyard designs, including the subject property, had to adjust themselves to topographical constraints. Featuring two rows of one-story detached residences arranged on either side of an ascending concrete staircase with the primary entrance to each unit opening directly onto the central walkway, the subject property exhibits the characteristics of the downhill U-parti bungalow court typology.

Despite minor interior and exterior alterations, the subject property retains sufficient integrity of location, design, setting, materials, workmanship, feeling, and association to convey its significance.

CALIFORNIA ENVIRONMENTAL QUALITY ACT ("CEQA") FINDINGS

State of California CEQA Guidelines, Article 19, Section 15308, Class 8 "*consists of actions taken by regulatory agencies, as authorized by state or local ordinance, to assure the maintenance, restoration, enhancement, or protection of the environment where the regulatory process involves procedures for protection of the environment.*"

State of California CEQA Guidelines Article 19, Section 15331, Class 31 "*consists of projects limited to maintenance, repair, stabilization, rehabilitation, restoration, preservation, conservation or reconstruction of historical resources in a manner consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic buildings.*"

The designation of the Stires Staircase Bungalow Court as an Historic-Cultural Monument in accordance with Chapter 9, Article 1, of The City of Los Angeles Administrative Code ("LAAC") will ensure that future construction activities involving the subject property are regulated in accordance with Section 22.171.14 of the LAAC. The purpose of the designation is to prevent significant impacts to a Historic-Cultural Monument through the application of the standards set forth in the LAAC. Without the regulation imposed by way of the pending designation, the historic significance and integrity of the subject property could be lost through incompatible alterations and new construction and the demolition of an irreplaceable historic site/open space. The Secretary of the Interior's Standards for Rehabilitation are expressly incorporated into the LAAC and provide standards concerning the historically appropriate construction activities which will ensure the continued preservation of the subject property.

The City of Los Angeles has determined based on the whole of the administrative record, that substantial evidence supports that the Project is exempt from CEQA pursuant to CEQA Guidelines Section Article 19, Section 15308, Class 8 and Class 31, and none of the exceptions to a categorical exemption pursuant to CEQA Guidelines Section 15300.2 applies. The project was found to be exempt based on the following:

> The use of Categorical Exemption Class 8 in connection with the proposed designation is consistent with the goals of maintaining, restoring, enhancing, and

protecting the environment through the imposition of regulations designed to prevent the degradation of Historic-Cultural Monuments.

The use of Categorical Exemption Class 31 in connection with the proposed designation is consistent with the goals relating to the preservation, rehabilitation, restoration and reconstruction of historic buildings and sites in a manner consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties.

Categorical Exemption ENV-2020-897-CE was prepared on August 6, 2020.

EXHIBIT F

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Address/Legal

Site Address	1259 W SUNSET BLVD
Site Address	1257 W SUNSET BLVD
Site Address	1257 1/2 W SUNSET BLVD
ZIP Code	90026
PIN Number	136-5A211 47
Lot/Parcel Area (Calculated)	9,999.9 (sq ft)
Thomas Brothers Grid	PAGE 634 - GRID F1
Assessor Parcel No. (APN)	5406015001
Tract	ANGELENO HEIGHTS
Map Reference	M R 10-63/66
Block	31
Lot	27
Arb (Lot Cut Reference)	None
Map Sheet	136-5A211

Jurisdictional

Planning and Zoning

Assessor

Case Numbers

Citywide/Code Amendment Cases

Additional

Airport Hazard	None
Coastal Zone	None
Farmland	Area Not Mapped
Urban Agriculture Incentive Zone	YES
Very High Fire Hazard Severity Zone	No
Fire District No. 1	No
Flood Zone	Outside Flood Zone
Watercourse	No
Hazardous Waste / Border Zone Properties	No
Methane Hazard Site	Methane Zone
High Wind Velocity Areas	No
Special Grading Area (BOE Basic Grid Map A-13372)	Yes
Wells	None

Seismic Hazards

Economic Development Areas

Housing

Public Safety

EXHIBIT F
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