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University of Massachusetts Amherst

**Building Social Capital
to Protect Natural Capital:
The Quest for Environmental Justice**

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2001

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Introduction

Across the United States, the concept of environmental justice has been gaining ground. Initially defined in the negative – a reduction in the disproportionate exposure of minority residents to various hazards – environmental justice advocates often took as a first task raising awareness of environmental disparities both nationally and locally. In this effort, activists have had success at changing policies as well as projects. In 1994, for example, President Clinton acknowledged the issue in a Presidential Executive Order directing all federal agencies to take into account the potentially disproportionate burdens on U.S. minority communities of pollution or hazard siting. In 1998, the Southern California Air Quality Management District created a local Task Force on Environmental Justice, partly in response to a lawsuit filed by community advocates who contended that the District’s permit trading system was leading to “hot spots” in minority neighborhoods.¹

While these policy victories have been primarily directed at reducing harm or ameliorating inequities, environmental justice (EJ) also can offer hope for a more positive and harmonious vision of the social good. That is, claiming the right to clean air and water can be the beginning of a community movement to deploy natural assets in the service of community-based wealth creation (as in the community food strategies profiled by Raquel Rivera Pinderhughes (2001)). Indeed, the assertion that communities deserve equity in their access to a healthy environment can lead to similar assertions with regard to the distribution of other social resources, such as schools, housing, open space, and employment. The resulting equitable distribution of other social commodities can feed back to help the environment itself: recent research has demonstrated that lower levels of inequality are associated with higher levels of environmental protection, presumably because the fairer distribution of power makes it difficult to place hazards in someone else’s backyard and thus enhances the incentives to engage in either source reduction or clean up at the regional and state levels (see Boyce *et al.* 1999; Morello-Frosch 1997).

This paper argues that our understanding of the EJ movement and its positive spillover effects can be enhanced if we highlight the central role of social capital in both triggering environmental inequity and producing environmental justice. Such an emphasis on social capital is not meant to diminish the other positive effects of the EJ movement. Where successful, the EJ movement has (at least relatively) protected health and thereby improved resident well-being, human capital, and labor productivity (see, for example, Environmental Health Coalition 1998). EJ groups have also had significant impacts on productive capital, particularly through the collaboration with business and public officials on “brownfield” revitalization (see U.S. EPA 1996).

Still, social capital plays a critical and special role. One of the reasons for the disproportionate exposure of some groups to environmental hazards is a relative lack of social power and social capital, that is, an inability to garner the political clout necessary to resist hazard siting and the isolation of some communities from others. Because of this, a key element in achieving environmental justice is the building of both “bonding” social capital that can unify or bring communities together and “bridging” social capital that can link these communities with each other and with potential allies. The resulting increase in social capital can, in turn, have positive impacts on both the environment and community development, both directly in affected communities and more broadly across economic regions.

This paper develops these arguments as follows: I first discuss the national-level evidence on the pattern of environmental inequity. Given the flurry of political and policy activity around environmental injustice, one would imagine that the existence of inequity was a firmly established fact. In fact, the social science research on this topic is quite mixed, with some authors purporting to show clear proof of environmental inequities and others suggesting that the seemingly racial patterns of exposure are either coincidence or primarily market-driven.²

The second section discusses a set of studies about the Los Angeles area I have conducted with a series of colleagues, especially Jim Sadd of Occidental College. I demonstrate that in L.A., Latinos and African Americans face nearly twice the exposure levels of Anglos, and note that differences in exposure remain even after controlling for income, population density, and other reasonable variables. I then outline some of our research on the intertemporal dimensions of hazard siting, suggesting that explanations rooted in terms of political power tend to offer more explanatory power than accounts simply based on market dynamics. Finally, I note how changing demographics – a potential signal of weakened social capital – can make a community especially vulnerable to siting.

In the third section, I explore the role of social capital in more detail. After noting how social capital may play a key role in whether a hazard will be sited in a neighborhood, I then focus on the opposite direction of causality: how the attempt to clean up the local environment – that is, to diminish the use of certain neighborhoods as the primary sinks for wastes – can lead to localized political empowerment and more social capital. Noting that there is actually little evidence that jobs must be sacrificed to reduce pollution in our study area of Lost Angeles, I suggest instead how EJ mobilizations can feed into a community-building approach. I then discuss how spreading the burden of sinks and the benefits of appropriation can in turn have positive direct and indirect impacts on a community’s and region’s natural assets.

The final section of the paper concludes by restating the central argument and considering how the social momentum and social capital generated by EJ organizing is increasingly being deployed to tackle a variety of community development challenges. I suggest, in particular, that as individuals, families, and neighborhoods learn to assert their property rights over the “commons,” they may also begin to demand improved access to the various public goods (such as schools, economic opportunity, and safety) that are necessary for asset-based community

development. Thus, EJ activism can be an important part of the general community-building movement.

Research On Environmental Inequities

While a 1983 study by the Government Accounting Office was one of the first significant studies of the distribution of environmental negatives, the United Church of Christ (UCC) study of 1987 is considered the landmark study by many activists. The study seemed to offer clear-cut findings that toxic facilities were disproportionately located in minority communities, a result which lent credence to social movements which had emerged out of a set of landmark protests in Warren County, North Carolina in 1982 when a largely African-American and rural community was chosen as the site for burial of a PCB landfill (Bullard 1994).³

However, just as the environmental justice movement was gaining traction – with the First People of Color Environmental Leadership conference held in Washington, DC in October 1991, the adoption of the Presidential Executive Order in 1994, the formation of an activist-influenced National Environmental Justice Advisory Committee within the EPA, and the adoption of environmental justice as an issue by some mainstream environmentalist organizations (such as the Environmental Defense Fund; see Sandweiss 1998) – the academic basis for environmental inequity was being challenged. Indeed, the relative disconnection between the strength of the social movement and the sometime ambiguity of the available evidence has led some to attack EJ as lacking a scientific foundation (Foreman 1998).

The most important studies challenging the documentable basis of environmental inequity came from sociologists based at the University of Massachusetts-Amherst.⁴ They criticized the earlier UCC study on two grounds: (1) the UCC study took zip codes as its unit of analysis, areas which are both large and not necessarily reflective of community-defined boundaries, and (2) the important associations that UCC researchers made between hazards and race were based on simple bivariate correlations (that is, relationships between two variables without consideration of the impact of a third). The latter criticism was especially significant since it suggested that racial differences in exposure might no longer be salient once controls were introduced for income, access to industry, and other relevant explanatory factors.

Using a more geographically compact unit, the census tract, as well as a multivariate approach, the UMass researchers offered a series of studies which demonstrated that the key factors associated with the placement of one form of hazard, toxic storage and disposal facilities, were income, population density, the proximity of manufacturing employees, and other variables – and that when these were taken into account, race generally did not have an independent impact (see Anderton *et al.* 1994a, 1994b). These national-level findings have been criticized for both methodological reasons and data inadequacies (see Been 1995; Bullard 1996). Still, the work included some substantial methodological advances over previous research – and the results called into question the basis of EJ concerns, particularly around race.

The importance of the central Anderton *et al.* finding – that income matters but race does not – should be stressed. From an ethical viewpoint, disparate impacts on the poor would be sufficient grounds for concern: if certain income groups are seeing their natural assets diminished by their transformation of their communities into environmental sinks, then this reflects an inequity which should be addressed. However, within the U.S. legal context, racial minorities are a protected category under federal law and the poor are not.⁵ Thus, for many poor communities, finding a disproportionate exposure by race is the only way to seek a public policy remedy; if environmental inequity is primarily distributed across lines of class rather than race, then this may be accepted by a society which views the poor as simply the inevitable losers in a market system.

Indeed, some analysts have suggested that it is precisely market dynamics that determine the location of wastes: polluters are attracted to areas with low land values, and in turn, communities with low levels of economic activity are more likely to seek or accept such facilities as they try to encourage economic development (Been 1994). Thus, the Anderton *et al.* results are “rational”: if income matters, but race is insignificant, then the market is simply working its usual magic.

The Anderton *et al.* findings have been challenged by other researchers who have utilized better address data and more sophisticated Geographic Information System (GIS) and statistical techniques.⁶ While the results have been somewhat mixed, the bulk of the evidence points in the direction of inequity by class *and* race (see Been 1995; Szasz and Meuser 1997). Still, the dynamics of the market rather than politics might be present: Could it be that minorities and the poor are “attracted” to hazards by virtue of low housing costs that incorporate or internalize the environmental disadvantages? Does the apparent pattern of inequity simply reflect consumer choice rather than racial discrimination in siting?

Determining whether hazards were placed in minority communities or whether minority residents moved to these areas has important implications for an asset-based view of community development. Imagine that a neighborhood receives a new undesirable land use: as a result, wealthier residents depart and newer, poorer residents with a different set of risk-income trade-off preferences arrive to take their place. A statistical snapshot across the relevant region, no matter how multivariate, will show environmental inequity even though the whole process simply reflected a desire to maximize one sort of asset, housing, by substituting it for another, access to clean air and low-risk environments.⁷

Determining causality is also important for policy. If there really is a significant demographic transition after the siting of a hazard, then an environmental justice policy with regard to siting would be futile. Moreover, suppose that social protest leads local regulators or operators to improve their environmental record. If housing values then rise, this could lead to an exodus of poorer residents – in which case, measured socioeconomic variables for the local geography will improve, but only because of gentrification and displacement. This would represent little advance for the poor who were previously forced to suffer the negative externality – and it

would hardly fit the character of an asset-based community development whose goal is to uplift, not uproot, the poor.

What does the national research tell us about placement versus move-in? The University of Massachusetts researchers (Oakes, Anderton, and Anderson 1996) find that there is no evidence that hazards were placed in minority or poor neighborhoods but also find no significant demographic post-siting transition. Been and Gupta (1997) find no evidence of significant post-siting change in racial or ethnic composition, but they do find that Latino communities may be at special risk for siting. They also find that it is not the poorest areas that receive hazards – and since these areas later become poor, it could be that some of the poverty population indeed moves in, a pattern consistent with the market-oriented story.

In broad terms, however, the evidence has failed to settle the debate between a market framework which stresses choice and demographic change and a political approach which stresses unequal power and access to the decision-making process (see Hamilton 1995). In the next section, we consider some specific evidence from one urban area, Los Angeles; as we will see, the results there tend to support a more political view and also seem to reflect the role of social capital in constructing resistance to environmental negatives.

Environmental Inequities in the Los Angeles Area

In a series of papers, several colleagues and I have argued that much of the national-level work reviewed above is flawed for methodological reasons, including improper variable specification and problematic data sets (Boer *et al.* 1997; Sadd *et al.* 1999; Pastor *et al.* 1999). Perhaps most relevant is our argument that such distributional studies are more appropriately conducted at the regional level. After all, if industrial clusters are regional, so should be the distribution of waste: since furniture manufacturing is unlikely to move from Los Angeles to Seattle and Microsoft is unlikely to leave Washington for the Southland, we must consider who bears the brunt of the solvent-using furniture industry where it actually exists and will likely remain.

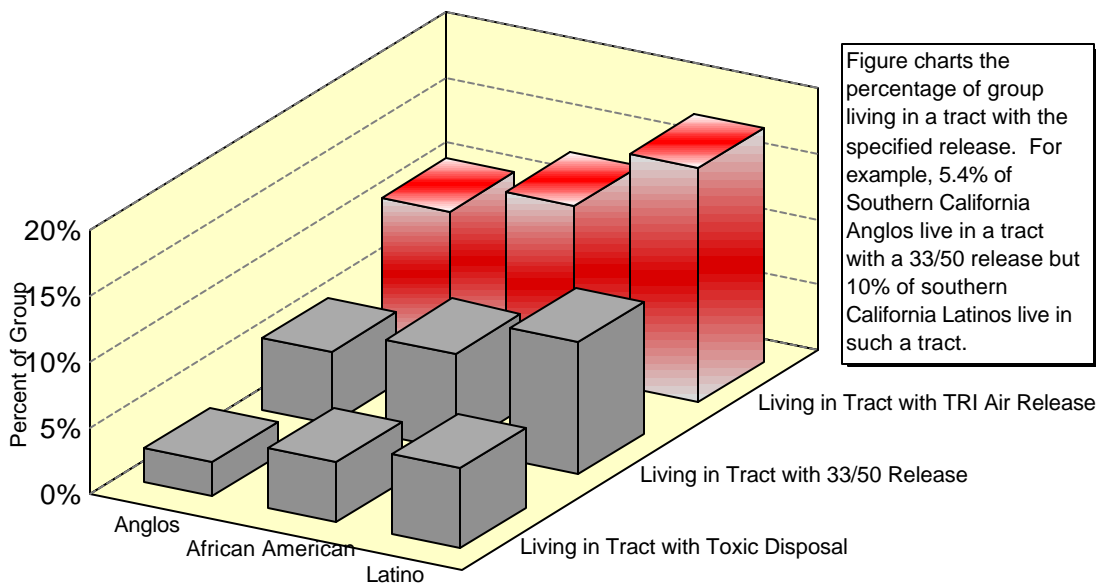
What have we found in our work on Los Angeles? First, in a multivariate regression which has as its dependent variable whether or not a particular census tract contains or is near a toxic storage facility, race *does* matter even after we take into account income, industrial land use, and local manufacturing employment. Moreover, the income effect is actually U-shaped – the poorest communities are spared as are the richest, with the most likely places to find such toxic facilities being working-class communities of color (Boer *et al.* 1997). The reason, we suggest, is a mix of economics and politics: in some very poor communities, the low level of economic activity correlates with low pollution levels; meanwhile, those at the top end of the distribution have sufficient political power to resist various locally undesirable land uses (LULUs).

Parallel regressions using data from the Toxic Release Inventory (TRI) yielded a similar set of relationships: even controlling for other factors, race influences the probability that a particular census tract will have a TRI release. We also found that the *degree* of toxicity of the releases rises with percent minority and increases in the other key variables.⁸ Income again takes a U-

shape, suggesting that the communities most suffering the effects of environmental injustice are working class, minority areas. Interestingly, it is exactly these areas that have been the focus of EJ organizing in Los Angeles, implying that such organizers have been appropriate in their targeting.

Figure 1 shows how this unequal distribution of risks plays out in terms of relative “exposure rates,” as measured by the percent of all Anglos, African-Americans, and Latinos in the broader Southern California area who live in a census tract containing one of three potential hazards: a toxic storage and disposal facility, an air release which contains elements on the 33/50 list of high-priority (and usually carcinogenic) toxics especially targeted for reduction by the EPA, or a general air release listed in the EPA’s Toxic Release Inventory (TRI). As can be seen there, Latinos have the highest likelihood of being in a tract with these hazards and Anglos have the lowest, with the African-American probability being in between.

Figure 1: Exposure by Group to Environmental Negatives in Southern California



What about placement versus move-in? To explore this issue, we obtained the dates when various toxic storage and disposal facilities (TSDFs) were located in the County of Los Angeles. We geo-coded these address-date pairs (visiting a sample to check actual facility locations) and then drew both ¼ mile and 1 mile circles around the site point to capture potentially affected areas. We then obtained a database which carried 1990 census tract shapes back through the 1980 and 1970 censuses, that is, that rearranged certain demographic data from those years to fit the 1990 shapes, creating a spatially consistent time series at the census tract level.⁹

The simplest way to understand the results is through a series of t-test comparisons of means. Table 1 compares the 1970 demographics for tracts in Los Angeles that were to receive an in-tract or proximate TSDf over the 1970-90 period to those tracts that did not. The results suggest that the receiving areas were indeed more minority, poorer, more blue collar, and had fewer home owners, lower initial home values and rents, and a lower percentage of college-educated residents. Population density was significantly lower for the ¼ mile zone, seeming to reflect the sensible notion that such hazards should be sited in areas with a lower population, but perhaps simply reflecting their siting in areas where an above-average fraction of the land is devoted to industrial or other non-residential usage. Density is higher (albeit statistically insignificant) at the one-mile level, a worrisome finding from a public health perspective.

	TSDf Sited Within 1/4 Mile Between 1970-90	TSDf Sited Within 1 Mile Between 1970- 90	County Average
Minority share (%)	53.2 ***	50.5 ***	31.8
African-American share (%)	25.7 **	20.1 ***	10.8
Latino share (%)	22.0	25.4 ***	18.0
Household income (annual)	\$8,197 ***	\$8,742 ***	\$10,032
Home value	\$21,611 ***	\$22,578 ***	\$26,042
Median rent (monthly)	116 ***	121 ***	\$138
College educated share (%)	7.9 ***	8.4 ***	12.6
Single Family Housing share (%)	55.5 **	63.5	64.4
Population density (persons per square mile)	6,849 *	9,112	8,724
Blue collar share (%)	55.5 ***	53.7 ***	46.1

*** Difference from all other tracts statistically significant at the .01 level

** Difference from all other tracts statistically significant at the .05 level

* Difference from all other tracts statistically significant at the .10 level

What happened in these tracts *after* a TSDf arrived? Table 2 presents the changes over 1970-90 in tracts that received or were near TSDfs sited in 1960-70, as compared to tracts that did not receive such hazards. As can be seen, the only changes of statistical significance were a relative decline in the percentage of African-Americans and the blue-collar presence within the one-mile zone, and a decline in the percentage of the college-educated in the most proximate areas; note that there is a move-in of Latinos (albeit statistically insignificant), suggesting a process of ethnic transition which we will explore below.¹⁰ The relative decline in blue-collar workers may be of special interest, given the usual trade-off story in which such sites are said at least to bring useful employment to local residents. However, these figures are for residents, not

jobs, so that issue cannot be directly explored here; we tackle the jobs-pollution issue with a different strategy below.

Table 2			
Demographic Changes in Census Tracts Following a TSDF Siting vs. Tracts Without a TSDF Siting			
Average Percentage Change from 1970 to 1990			
	TSDF Sited Within 1/4 Mile Between 1970-90	TSDF Sited Within 1 Mile Between 1970- 90	County Average
Minority share (%)	24.8	23.7	24.6
African-American share (%)	-5.7	-3.6 *	0.2
Latino share (%)	24.8	19.1	16.7
Household income	267%	278%	2756%
Home value	716%	808%	818%
Median rent	378%	373%	362%
College educated (%)	5.5 **	9.6	9.4
Single family housing share (%)	-1.7	-3.7	-4.7
Blue collar share (%)	-5.1	-8.2 *	-5.3

*** *Difference from all other tracts statistically significant at the .01 level*

** *Difference from all other tracts statistically significant at the .05 level*

* *Difference from all other tracts statistically significant at the .10 level*

Of course, as noted above, such simple tests can mask the underlying dynamics, and multivariate strategies are therefore in order. For that reason, we developed a simple model of TSDF placement and subjected it to a series of regression strategies. The results indicate that a higher presence of minorities and lower income levels as of 1970 were indeed statistically significant predictors (along with population density and a proxy for home ownership) of whether a census tract (particularly with 1 mile) was to receive a hazard in the next twenty years. This pattern supports the basic tenets of a political placement hypothesis: that is, the notion that minorities and the poor may have been special targets for such facilities.¹¹

Similarly, to explore the dynamics of move-in, we constructed a simple model of neighborhood demographic change, and added to it a variable indicating whether the neighborhood had a TSDF (within ¼ mile or 1 mile) as of 1970, and one indicating whether it had received a TSDF during the 1960s. The effects were generally negative – that is, TSDFs led to minority move-out, not move-in – but the results were statistically insignificant. Recognizing that the processes of siting and move-in may be happening quickly, we also tried a simultaneous equations approach which took into account both the demographic changes and siting decisions over 1970-90. The results: the placement hypothesis dominated, and, controlling for all other factors, the placement and/or existence of a hazard continued to have a negative, albeit statistically insignificant impact on minority move-in.

We then decided to go beyond the usual notion that minority presence *per se* leads to facility placement and look at the major minority groups separately. We found that in Los Angeles, census tracts were at peak vulnerability to a TSDF when their balance demographics were roughly 48 percent Latino and 44 percent African-American, that is, when neighborhoods had a rough balance between similarly disenfranchised groups. Since this balance is usually present when communities are in transition, we decided to look at the degree of demographic change in the immediate past – calculated by simply adding up the absolute values of the percentage shifts in the demographics of the four largest groups – and found that this measure of “ethnic churning” was a powerful predictor of the location of hazards.

Figure 2 maps this “ethnic churning” in Los Angeles County between 1970 and 1990 against the siting of TSDFs over the same period; as can be seen visually, there is a strong correlation. A detailed statistical profile reveals that there was a significant degree of ethnic change in the decade *prior* to siting, with demographic transition slowing during and after siting. A simultaneous multivariate technique yields similar results: ethnic churning is a strong predictor of a concurrent siting of a TSDF, while TSDF siting has little effect on subsequent ethnic transition. While these results do reveal some degree of post-siting move-in, our analysis suggests that the neighborhood is simply completing a process of change that first brought new minorities and, in their wake, new toxics.

Social Capital, Natural Assets, and Environmental Justice

While the patterns revealed in the L.A. research may seem complex, the general story is simple. First, race and income seem to matter in explaining the contemporary distribution of hazards. Second, there is strong evidence of disproportionate siting in minority neighborhoods but weak and sometimes contradictory evidence with regard to minority move-in after siting, suggesting that the contemporary pattern is due to inequity in siting decisions. Finally, one variable that has a significant impact on the likelihood of receiving a hazard is the extent of ongoing demographic change. Taken together, these results square better with a political explanation of TSDF siting than with a market- or choice-driven analysis.

The fact that areas in the midst of demographic change are more likely to receive sites also suggests the potential importance of social capital. In general, areas richer in social capital – both informal networks and formal community organizations – are better able to advocate for their needs, regardless of their level of other political and economic assets. Given the importance of race in the construction of individual and community identity, it may be unsurprising that an area that is nearly all African-American might be better able to resist a site than an area which is mixed: intra-racial bonds, and invocations of a collective history of discrimination, can be used to rally the community to its overall self-

interest. By contrast, a rapidly changing social fabric can make communities less able to mount resistance to siting decisions.

The resulting challenge – one that has been central to the EJ movement – is to build solidarity and social capital across a multi-racial public. This social capital can take two forms: (1) “bonding” social capital among those suffering the most environmental negatives, and (2) “bridging” social capital that reaches out for support from other communities. “Bonding” involves building connections within a community via organizing, a task often facilitated by the immediacy of the health issue, and by the deep, visceral sense of evident injustice that environmental inequity presents. Such bonding is often complicated by the need for inter-ethnic organizing, but it is critical for protecting natural assets: as Cole (1992) notes, lawyers can help communities win injunctions, but it is a mobilized community that will ensure enforcement and thus protect the local environment.

EJ activists have also sought to build on “bridging” social capital, working to help minority communities cultivate powerful allies in other communities. This task is facilitated by the fact that the mainstream environmental movement has made progress in recognizing the importance of environmental inequity, and by the general public’s moral sense that the environment is a public good to which communities should have open and relatively equal access. As a result, the notion of sharp disparities in the distribution of hazards – and the resulting uneven abilities to enjoy natural assets such as clean air and water – is unpopular. Instances of environmental inequity therefore present an opportunity to build alliances within and between disenfranchised communities as well as with the broader public.

The ultimate reason for building this social capital is to influence policy to ensure that communities are protected from unfair use of their wealth or assets. While the EJ movement has not often articulated itself in these terms, we can easily see the movement as asserting community property rights over the environmental sinks of air and water.¹² Indeed, the policy and political challenge for the EJ movement is to define more specifically the relevant property rights (community control over the sinks) and the relevant boundaries (at the neighborhood or regional level), and then to contest other forces (including both polluters and regulatory agencies) about both these issues.

Within this framework, we can argue that environmental inequity arises when the community property claim – that is, the right to determine how much pollution a neighborhood will tolerate, and for what purposes – is appropriated by others, whether by the regulatory apparatus of the state or by a particular firm. If a community experiences a localized environmental negative from an activity for which benefits are widely dispersed (for example, when toxic by-products of production that benefits an entire region are disposed of in one particular neighborhood), or if the benefits are highly concentrated in another community (as when the profits and employment opportunities engendered by waste firm operations accrue to individuals outside the local area), the affected community bears environmental costs without receiving commensurate positive benefits in return; this represents a violation of the community’s property rights.¹³

On the other hand, to the extent that a community itself chooses to trade environmental integrity for another goal, such as economic development, it is valuing the flow of benefits from one asset, productive capital, above that from another asset, natural capital. In such a case, some observers may not be as concerned about any apparent inequity in the distribution of environmental hazards, on the grounds that the affected populations are being compensated by employment and may be balancing health and jobs along their own collective “indifference curves.”¹⁴ Others will argue that this sort of “vicious choice” reflects a trade-off with which no community need be faced.

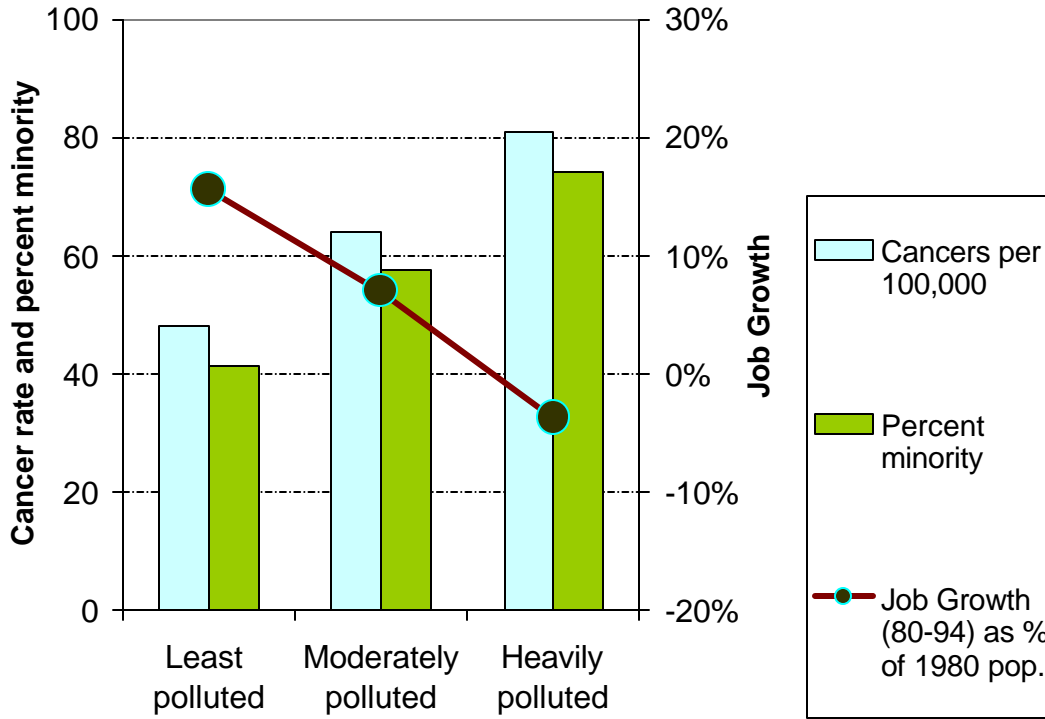
Have the disproportionately affected communities in Los Angeles at least gained jobs and other benefits? To look at this question, I broke Los Angeles County into 58 different Public Use Microdata Areas (PUMAs), a geographic frame used in the U.S. Census Bureau’s Public Use Microdata Sample (see Figure 3). In L.A., the PUMAs are geographically compact, follow recognizable community lines, and are of sufficient size to examine localized labor and retail markets.¹⁵ The typical PUMA is about 22 square miles, with an average population in 1990 of about 150,000 and slightly less than 80,000 jobs.

To examine the relationship between environmental costs and employment benefits, I then took an estimate of the additional cancer risk from hazardous air pollutants in each PUMA, based on the EPA’s Cumulative Exposure Index as developed by Rachel Morello-Frosch (1997). Dividing the areas into three categories, ranging from least polluted to heavily polluted, I calculated the percentage of minority residents against the rate of job growth in the 1980-94 period, based on data provided by the Southern California Association of Governments. The racial disparities, depicted in Figure 4, are quite clear: the cancer risk due to air pollution and the percent minority rise in tandem. The line in the figure shows the rates of job growth over the 1980-94 period: as can be seen, the higher the level of pollution, the lower the rates of employment increase.¹⁶ In the most polluted areas, employment actually declined.

This pattern hardly recommends a toxic-based strategy for community development. It also raises serious issues for a market-oriented story which claims that choices are being made by communities along their self-selected indifference curves. After all, if communities are balancing potential environmental risks against improvement in economic potential, they are clearly not getting a very good deal. Instead, it looks like environmental degradation and economic weakness go hand in hand.

The idea that there might be complementarities between various forms of capital – natural, social, human, financial, and physical – is increasingly accepted by economic researchers.¹⁷ Consider, for example, how the mutually reinforcing character of natural and financial capital can affect the extent of rain forest destruction through two mechanisms: (1) the financial poverty of residents can induce a short-term mentality

Figure 4: Pollution and Jobs: Is There a Trade-off in Los Angeles County?



which leads to overuse of natural assets (Kyle and Cunha 1992); and/or (2) the lack of wealth and therefore social power of poor, forest-dependent communities weakens the resistance to timber companies, mining firms, ranchers, and other outsiders who may seek to exploit natural resources (Segura and Boyce 1994). In either case the solution is to increase a community's economic assets as a way to protect natural assets. As for social and productive capital, an intriguing body of recent literature suggests that relative equality in the distribution of income actually tends to enhance social consensus and improve overall economic policies and performance in both countries and regions.¹⁸

What is the relationship between social capital and natural capital? As we have seen, the lack of bonding social capital within a community can lead to environmental vulnerability; organizing, on the other hand, can lead to direct improvements. Yet the bridging aspect of social capital may be just as important for enhancing natural assets. In a recent dissertation, for example, Rachel Morello-Frosch (1997) offers a startling finding: using a cancer risk variable based on the EPA's cumulative exposure index (used above in the job trade-off analysis), she discovered that those California counties with the deepest inequalities of income, wealth, and race also experienced the highest level of hazards in the county as a whole. Boyce *et al.* (1999) similarly find that greater inequalities in power, in this case at the state level, lead to weaker environmental policies and adverse public health outcomes. In short, EJ struggles to equalize

hazard exposure may lower the overall level of pollution: forcing the commons to really be common may help in clean-up and preservation.

EJ activists have long recognized this potential, partly because they seek to avoid simply shifting hazards to other neighborhoods and thus straining alliances. As a result, EJ principles tend to call for source reduction as the ultimate goal, and this in fact has been a primary focus for many EJ groups (see, for example, Environmental Health Coalition 1998). Other groups have turned their attention from preventing new hazard location toward the clean-up of lands with a legacy of toxic uses and their conversion to new productive uses. The latter is the thrust of the brownfields initiatives in which EJ groups have often played a vital role (see EPA 1999 and Dixon 2001). This represents a potential marriage between social capital, productive capital, and natural assets.¹⁹

Conclusion: Building Social Capital to Protect Natural Capital

As Boyce (1994) argues, there is a tendency to pose environmental issues in terms of humans versus nature, a view which feeds into notions of a jobs-environment trade-off. Rather, the issue – one found both in the realm of the environment and elsewhere in society – is that some groups of humans are positioned against others, with each group asserting its claim to some form of capital. Thus, Boyce suggests that any analysis of the environment should ask: (1) who are the net gainers from an environmentally degrading action (since it would likely not be taken unless there was a benefit for someone)? (2) who are the losers? and (3) what is it about the relationship between the winners and the losers that allows this pattern to be sustained?

The siting of toxic hazards, a central concern of the environmental justice movement, is a clear example where there are winners and losers – and where power seems to matter more than markets. There remain significant methodological problems in the literature on hazard location, and debate about techniques and evidence are likely to engage social and natural scientists for years to come.²⁰ Still, the research reviewed above presents a compelling case that there are indeed significant disparities in the allocation of hazards, and suggests that these disparities are better explained by politics than by the impartial operation of markets.

First, recall that environmental toxics are disproportionately located in minority neighborhoods but are not located in the poorest communities. This suggests that something besides simple market dynamics is influencing the placement of such hazards. Second, statistical tests in at least one urban area suggest that placement or siting is far more important than move-in, once again casting doubt on the simple market story in which minority residents are exercising choice by trading one asset (cleaner air) for another (lower housing prices). Third, there is also little evidence of a positive tradeoff between pollution levels and job growth; indeed, the overall panorama suggests that more pollution leads to fewer jobs.

Finally, social capital may be important in understanding the pattern of environmental inequity and the state of natural assets. There are indications that areas experiencing the most significant

demographic change – areas where the social fabric may be temporarily torn – are the most vulnerable to new siting. And there is additional evidence that where social capital is strongest in a region or a state – as measured by the equity in the distribution of income and power – the environment is actually in better shape. As a result, building social capital through EJ organizing can have a direct impact on building a community's and society's natural assets.

Indeed, the EJ movement can be understood as a broad effort to improve the asset base of poor people of color. It is prompted by environmental concerns but often motivated by underlying civil rights and social concerns. The original statement of EJ principles from the First People of Color Environmental Leadership Summit opened with an affirmation of “the sacredness of Mother Earth, ecological unity, and the interdependence of all species,” but in practice, the urban variant of the EJ movement has often been more specifically defined by opposition to environmental degradation and to racism in public policy, and many of the urban activists have emerged from the civil rights movement and other multi-racial organizing efforts. Thus, EJ has often had more to do with the broader social movements for racial and economic justice than with environmentalism writ small.

In recent years, some dynamic new efforts have brought EJ concerns to a higher policy level, tying environmental issues to basic economic equity. In Los Angeles, for example, the Labor-Community Strategies Center cast transportation as an EJ issue, and organized a Bus Riders Union which successfully sued the local transportation authority, forcing it to curtail spending on rail development (used more frequently by suburban commuters) and instead to expand the bus service used primarily by the region's poor.²¹ In San Francisco, the Urban Habitat Program (UHP) has moved from straightforward EJ work to address a wide range of challenges associated with suburban “sprawl.” Arguing that environment-friendly anti-sprawl efforts can re-steer development back to the inner city (as in Portland, Oregon; see Rusk 1998, 22), UHP proposes regional tax-sharing as one element of a solution.

These broad challenges to urban development strategies are an appropriate next step for the EJ movement. After all, environmental inequity is really part of a larger phenomenon in which older industries have abandoned central city areas and left a weak job base, concentrated poverty, and pollution in their wake.²² Community development in urban America will require improving the asset base on all sides: independent wealth for business formation, available employment for workers, stronger social capital for communities, and a cleaner natural environment which can pave the way to both healthier residents and new industrial and other development. By stitching these concerns together, EJ groups are strengthening social capital and pursuing an asset-based community-building approach.

Endnotes

¹ Specifically, Communities for a Better Environment (CBE) filed suit against an emissions-trading program in which oil firms could maintain dirty refineries if they cleaned up an equivalent amount of pollution by purchasing and then destroying heavily-polluting older vehicles. While such trading did yield overall benefits – especially a cleaner air basin at lower dollar costs – it imposed local burdens by leaving the hazards concentrated in the neighborhoods hosting the refineries. After CBE sued, the Air Quality Management District was forced to suspend the program, and the Task Force came into being. For more on CBE’s lawsuit and its specific impacts, see Kuhn (1999).

² If the pattern of inequality is perceived rather than actual, it may still have social effects (such as feelings of disempowerment in public policy processes) but it would seem to have little impact on the real enjoyment of environmental goods by poor and minority communities. For more extensive reviews of the EJ literature, see Szasz and Meuser (1997), Bryant and Mohai (1992), and Foreman (1998); while the first two pieces generally support EJ suppositions, Foreman (1998) is more skeptical.

³ The earlier U.S. GAO study grew directly out of the protest and was initiated under pressure from the Congressional Black Caucus. See U.S. GAO (1983).

⁴ Some have argued that the Anderton *et al.* studies were biased because they were funded by a grant from the largest waste management firm in the U.S. As noted, however, these studies offered significant methodological improvements over earlier research.

⁵ The story is a bit more complicated. Title VI of the Civil Rights Act of 1964 mandates that entities getting federal assistance cannot discriminate. Historically, Title VI has been attractive to civil rights litigators since it requires that plaintiffs demonstrate disparate outcomes rather than discriminatory intent (which is more difficult and, in the EJ situation, requires an extensive analysis of actual siting practices and histories). Despite this looser standard, no environmentally-oriented lawsuit filed solely on these grounds has been successful. Activists have been able to continue to file administrative complaints through the EPA alleging disparate impacts under Title VI, as this targets the regulations under the title (see Ramirez and Stephenson 1998 and also Kracov 1998).

⁶ As Been (1995) notes, the Anderton *et al.* (1994a, 1994b) was based on a “dirty” database in which addresses had not been checked for accuracy, partly because of pure error and partly because some firms list their business address rather than the site address in various national databases.

⁷ It would, however, still be difficult to explain the racial pattern without resorting to either a hypothesis that risk preferences are different for different groups and/or that housing

discrimination exists, such that minorities are forced to select housing from a more limited (and more polluted) pool. While the latter is different than a pure “market dynamics” story, the problem still lies in the movement of people and not the placing of hazards. Of course, the policy solution is different: if it is simply choice, then individuals should be provided with full information regarding local hazards in order to make the best choice; if it is housing discrimination that ‘steers’ minority movers, then this must be addressed through enforcement of existing housing laws or the enactment of more effective legislation.

⁸ The degree of toxicity in this case is measured by casting the tracts into three categories: those that had no air releases as recorded in the Toxic Release Inventory, those that had air releases that were not on the EPA’s 33/50 list, and those that had 33/50 air releases (see the discussion in the text). The latter are substance releases identified by the EPA as “high priority” for reduction. Another categorization, in which the dividing line at the top involves those releases identified as carcinogenic, yields a slightly different allocation of tract but roughly the same results for an ordered logit regression on the determinants of location.

⁹ The technical details of this data construction and the formal econometric results, including from a simultaneous model, are explained in Pastor, Sadd, and Hipp (forthcoming). The original file with the 1990 shapes for 1970 and 1980 data was developed by the California Department of Finance and provided to the author.

¹⁰ Given these anemic results for “move-in” effects, we wondered whether changes showed up more rapidly and then tracts converged to the county average over time. Considering the areas receiving sites in the 1960s and the effects in the 1970s, we found very marginal evidence of a relative increase in percent minority, falling blue collar presence, and declining housing values for the areas within one mile of the sited hazard. For those tracts receiving sites in the 1970s, the subsequent decade brought a moderately significant increase in percent minority in the one-mile buffer, a fall in the percent college-educated for both radii of influence, a decline in household income in the ¼ mile zone, and a surprising increase (at least according to “move-in” proponents) in home values (and, to a less significant degree, rents) in the one-mile zone. While the overall pattern offers some modest evidence for the move-in hypotheses – limited increase in minorities in both ten-year periods, and a fall in housing values in one of the time periods examined – both the general pattern of statistical insignificance and certain contradictory results (including a relative decrease in blue collar workers, an increase in housing values, and an apparent move-out of African-Americans) suggest problems with the “market dynamics” or choice-driven story. As we note in the text, there is also little evidence for move-in once we nest the relationships in a multivariate regression analysis.

¹¹ There is a bit of “smoking gun” evidence of the role of politics in placement. A report by Cerrell Associates, Inc. (1984) which provided advice to the California Waste Management Board on locating waste incinerators stated that “all socioeconomic groupings tend to resent the nearby siting of major facilities, but the middle and upper-socioeconomic strata possess better

resources to effectuate their opposition. Middle and higher-socioeconomic strata neighborhoods should not fall at least within the one-mile and five-mile radii of the proposed site.”

¹² I thank Jim Boyce for pointing me in the direction of this property rights analysis.

¹³ For example, California’s 1986 Tanner Act requires that governments develop local assessment committees for siting new TSDFs which would be “broadly constituted to reflect the makeup of the community.” However, in practice, the “local” community has been defined to be a large geographic unit, such as a county, and this has allowed the general and diffuse benefits to overwhelm the concentrated neighborhood costs in the process of making siting decisions (Cole 1999). For this reason, Schwartz and Wolfe (1999) recommend modifying the Tanner Act to include a provision that four of the seven committee members be from the adjacent communities; they also suggest that there be some mandate for minority representation.

¹⁴ Of course, until decision-making authority is truly democratic, there is little reason to assume that pollution outcomes reflect choice and not simply the distribution of power. For this reason, the most critical element in the EJ agenda is general community empowerment.

¹⁵ This geographical unit – larger than the census tract but still sub-county and often sub-city – is especially appropriate in a metropolitan area like Los Angeles, where the city is spread out and contains its own suburbs. Indeed, within the city itself, places like Watts may have more in common with immediately adjoining unincorporated county territories and old industrial suburbs than they do with the San Fernando Valley or the Westside. The municipal line where South L.A. abuts the region’s inner-ring suburbs won’t stand in the way of a short commute to employment or shopping -- but the profound distances within the city between the San Fernando Valley and East L.A. often will.

¹⁶ In Figure 4, I define job growth as a percentage of the 1980 population. Using a base of 1980 jobs shows an even wider disparity: more polluted areas generally have more jobs per resident, but the relative strength of that job base has been steadily shrinking over time.

¹⁷ Some trade-offs no doubt remain, but if we think in several dimensions, we can see another important point: an increase in one form of capital may improve the balancing act between two other forms. Imagine a curve describing a community’s preferences between feasible mixes of environmental protection and job creation. To the extent that a community enjoys political power rooted in social capital, it can improve outcomes in each area, that is, shift the curve upward to improve the overall tradeoff.

¹⁸ On the international evidence, see, for example, Rodrik (1994) and Birdsall and Londoño (1997); on the evidence for U.S. regions, see, for example, Savitch *et al.* (1993), Barnes and Ledebur (1998), and Pastor, Dreier, Grigsby, and Lopez-Garza (2000).

¹⁹ While some business critics have worried that the involvement of EJ groups would make brownfields development contentious, the opposite has been the case: a recent EPA study of seven of its Brownfields Pilot Study sites found that sites with active environmental justice movements were less likely to result in filings under Title VI because communities were involved early in planning for Brownfields reuse (see US EPA 1999).

²⁰ New models will have to take better account of innovations in geographic research (see Bowen 1999) and analyses will need to go beyond the simple presence of pollutants to more exactly specify the relationship between proximity and exposure on the one hand, and exposure and risk on the other. Attempts to quantify the hazard effect on health indicators is underway; see, for example, Morello-Frosch (1997).

²¹ For more on transportation issues, see Center for Community Change (1998) and Hodge (1995); for more on the L.A. experience, see Mann (1996).

²² For a full explication of this argument, see Pastor (2000).

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The Natural Assets Project

The Natural Assets Project, based at the Political Economy Research Institute of the University of Massachusetts, Amherst, is a collaborative initiative launched with support from the Ford Foundation. The project aims to promote critical analysis and discussion of the potential for building natural assets – individual and social wealth based on natural resources and ecosystem services – to advance the goals of poverty reduction, environmental protection, and environmental justice.

Figure 2
 TSDFs Placed During 1970s and 1980s
 and Ethnic Churning-- Los Angeles County

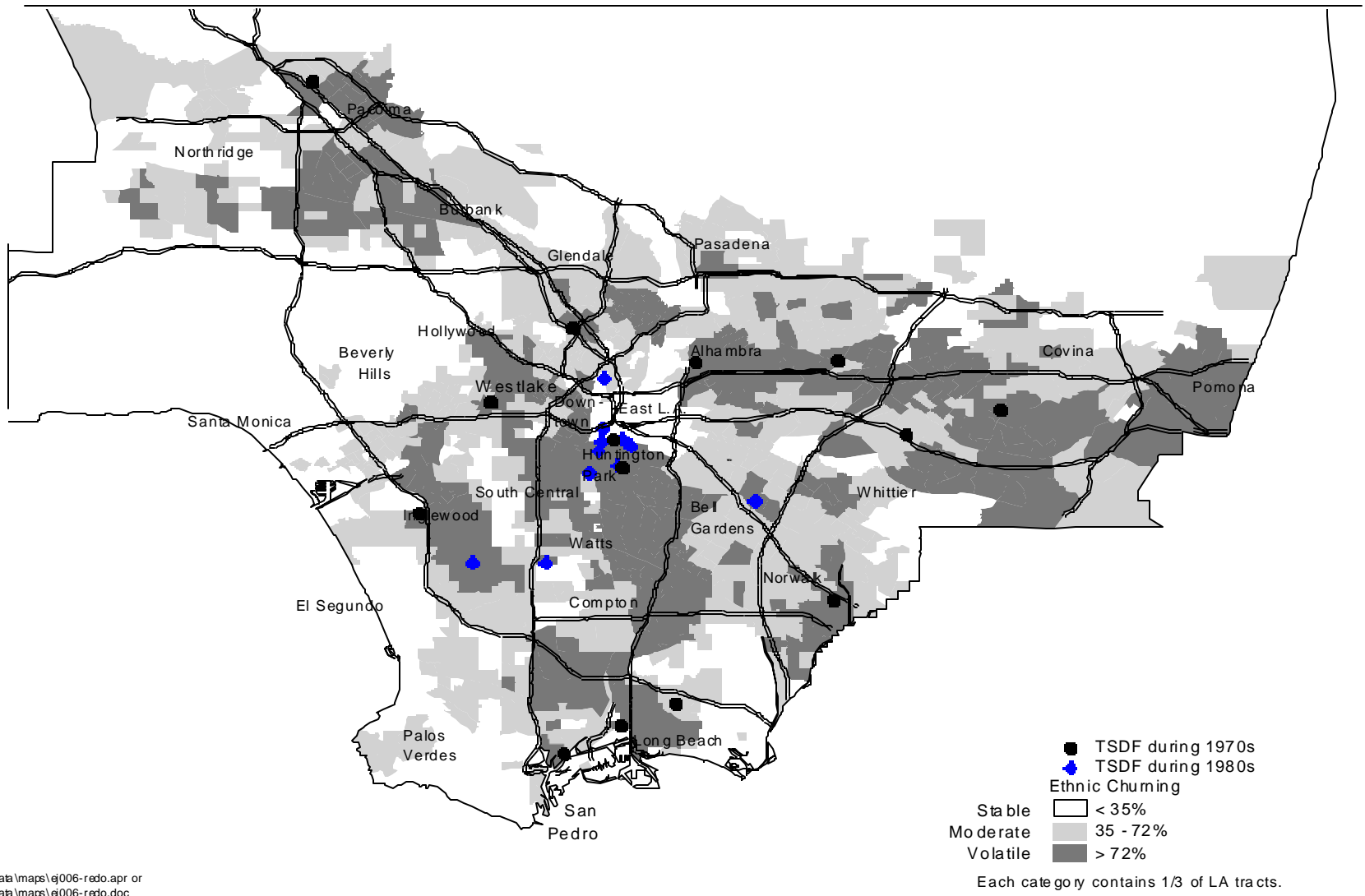
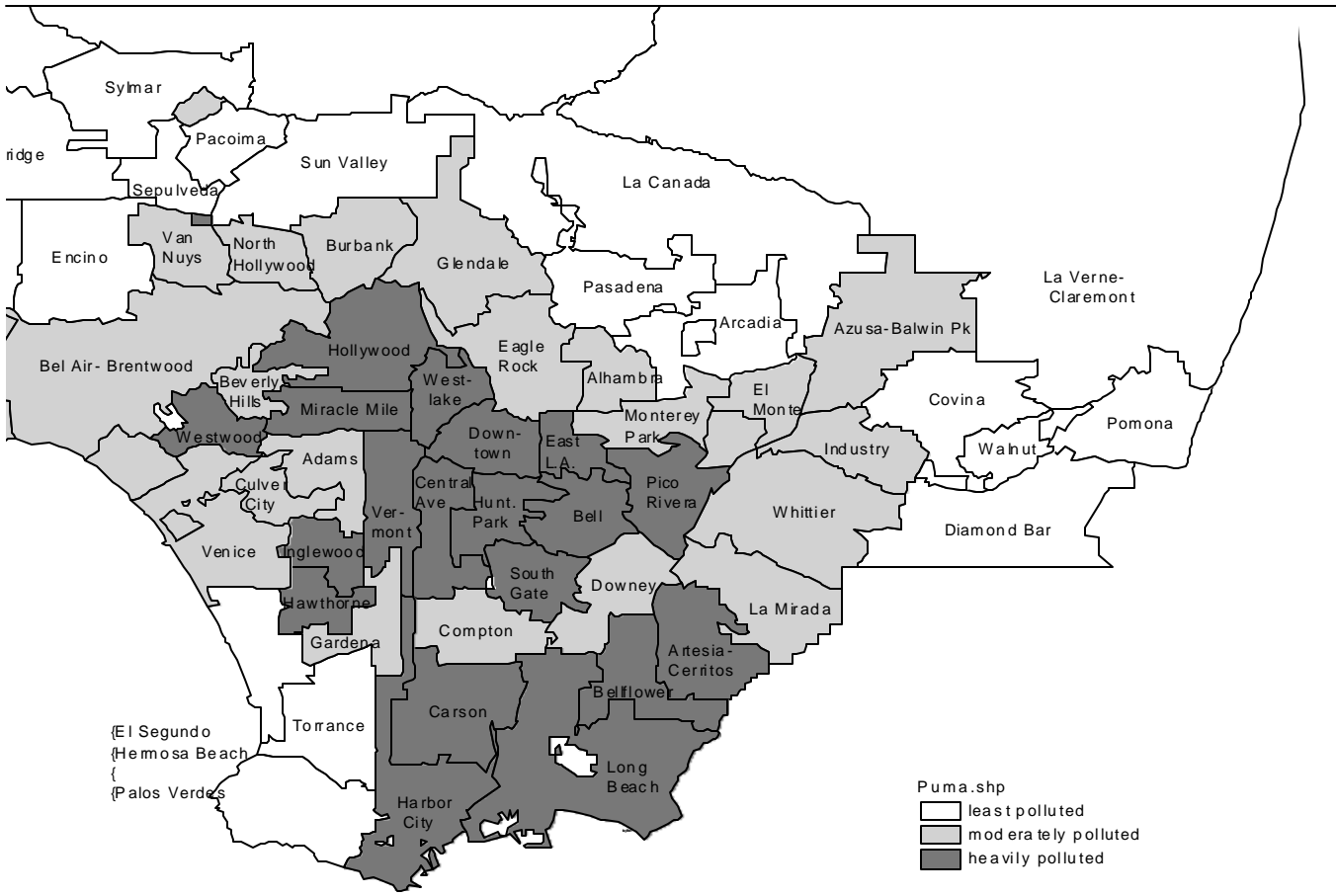


Figure 3
Los Angeles County--PUMAs



Puma.shp
 least polluted
 moderately polluted
 heavily polluted



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