

Major Redevelopment Options

**Includes an
Appendix on Environmental Analysis**

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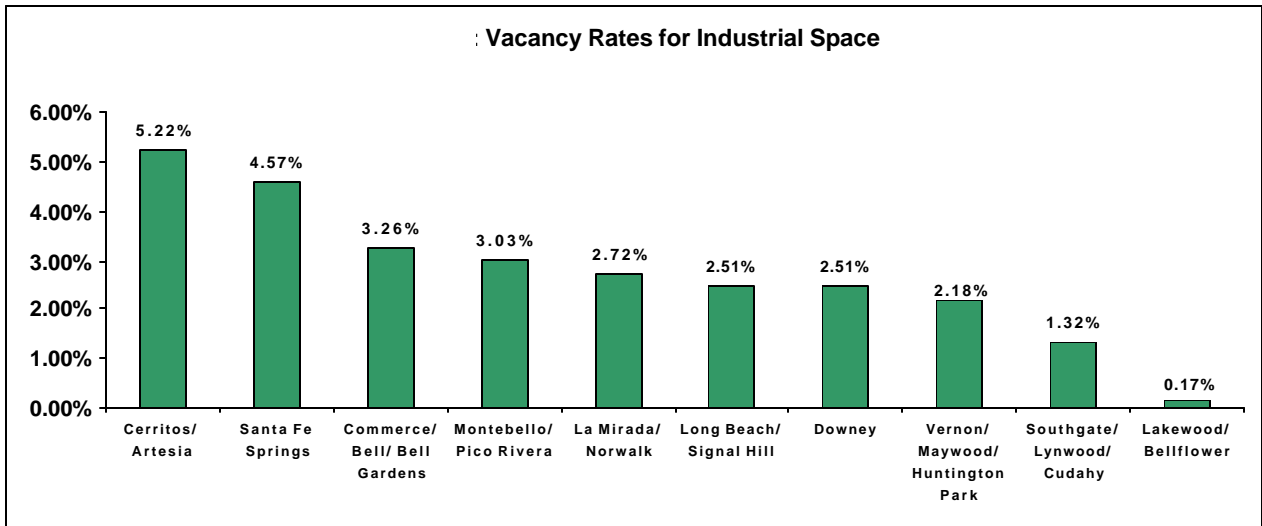
The major redevelopment options are to reuse the property, capitalizing on useful industrial infrastructure; or to tear-down and start over, or to reuse for a non-industrial use. With each of these options, aggregating several parcels to create a larger development project is often an important strategy to make a deal feasible.

Any industrial site that will be redeveloped will require an environmental analysis. This is part of the due diligence necessary for a prospective buyer or a prospective borrower. Appendix I discusses the process of environmental analysis.

Option #1: Reuse Existing Buildings for Industrial Use

Industrial land comprises a larger portion of the Gateway Region than other areas of Southern California, with over twice as much leasable industrial space as the City of Los Angeles. In fact, the cities of Vernon, Maywood and Huntington Park alone account for over 60 million square feet of leasable space - roughly 22% of the Gateway Region total.

Reuse of existing structures for new businesses happens regularly within the Gateway Cities Region. The number of idle properties is minimal, especially when compared with the East Coast or Midwestern Rust Belts. The demand for industrial space keeps most properties leased as shown by the vacancy rates in the following graph. The vacancy rate for industrial land ranges from 5.22% in Cerritos and Artesia, to as low as 0.17% in Lakewood and Bellflower.



Source: Cushman & Wakefield, Los Angeles, CA Mid-Year 1999

The downside is that some of these uses are less productive from an economic or job-producing perspective. Some properties are leased when they'd be more productive for the economy if redeveloped into Class "A" industrial space. Often the culprit is the possible contamination that the current landowner is not interested in assessing and

cleaning up. Another reason they aren't redeveloped is the size of the property. Many individual parcels are too small to be economically redeveloped.

In the City of Vernon, a unique city of less than 100 residents, most of the land is zoned industrial. To maintain the value of the land for productive use and capitalize on existing infrastructure, the City passed an ordinance requiring all tenants as well as landowners to undertake an environmental assessment of their property when vacating. This was done to ensure that any contamination would be cleaned up rather than left to cause future problems.

Option #2: Tear Down and Start Over

The development community would like to respond to the demand for industrial space, but the scarcity and irregular parcel size of suitable land limits development efforts. As a result, when businesses seek to expand, they must look outside the local market for appropriate real estate. In *Trends Outlook 2000*, prepared by the brokerage firm of CB Richard Ellis, evidence is cited of this pattern in Commerce, Vernon, and the South Bay. They found vacancy rates within these sub-markets ranging between 1% and 3%. Consequently, they find expanding Gateway City businesses looking to the mid-counties, the San Gabriel Valley and Inland Empire for sites large enough to support business expansion.

As a strategy for redevelopment, site assemblage of industrial properties will be required in many cities to successfully redevelop industrial areas into higher value industrial uses with higher paying jobs. For any buyer, each site must be assessed for environmental contamination prior to purchase. A strategy used by successful redevelopment agencies is to apply for a U.S. EPA Brownfields Pilot grant to provide the seed money to start the ball rolling. By providing a prospective developer with information on the extent of contamination, one element of risk is eliminated. With the number of "brownfield developers" growing, developers with experience are available to partner on the redevelopment of industrial properties with obsolete buildings into productive uses.

Option #3: Adaptive Reuse of Obsolete Buildings

Adaptive reuse refers to conversion of a building into a use for which it was not designed. In order to be successful, both site characteristics and local market demand must be known. Successful conversions can be typified as those that integrate distinctive site and building characteristics with market-based uses.

Market analysis and economic valuation; site and locational considerations; and structural constraints are the three key areas that should be included in the evaluation process of adaptive reuse sites. The following steps provide an overview of the process of evaluating the feasibility of adapting an existing building to a new use.

Analysis of the Local Market

As in any real estate development, there must be a demand for the product that justifies the investment. Therefore, the first step to market analysis is to identify the need or demand for various building types, i.e. office, industrial, multi-family residential, or retail. Single-family residential is not analyzed for adaptive reuse since an existing building is unlikely to support a single-family detached development. Demand can be measured by vacancy rates and/or the speed with which rental rates are increasing.

Once the two or three highest demand uses are identified, the next step is to thoroughly analyze the local market potential. Market potential can be determined by developing detailed estimates of the cost to convert the building to each potential use and the potential revenue to be generated by each use over a five to seven year period. A comparison of the income and cost estimates for each alternative use will reveal which has the higher net value. This comparison should be calculated as a net present value of the cash flows to take into account the time value of money. The one with the higher value is the highest and best use for the building.

One key to success is to take advantage of the design opportunities presented by the existing building and devise cost-effective solutions to structural constraints that are certain to materialize. In exploring the marketability of alternative uses, the developer should conduct an infallible two-step litmus test:

1. Would the current market demand warrant the construction of a new facility at the existing location if it were an empty site?
2. Can the existing facility be economically modified to accommodate market demand?

A poor response to either question should terminate the process. A positive response however, justifies further investigation on a site's potential.

Financing Mechanisms for Adaptive Reuse Projects

Historically, conventional sources of debt financing have assigned high levels of risk to the structural and market uncertainties associated with redeveloping existing buildings, meaning that developers have faced higher interest rates. Very little non-recourse lending is available for adaptive reuse development regardless of the strength of the particular market fundamentals. However, awareness is growing among lenders that a strong market potential exists for adaptive reuse.

Financing for adaptive reuse development is still largely based on equity. Projects are typically funded through a combination of the project sponsor's out-of-pocket financial resources, investment equity, some debt financing, and a little help from public incentives. There are some Federal government resources available to finance adaptive reuse sites. Although few programs specifically address adaptive reuse, many of the programs targeted for community revitalization, historic preservation, and affordable housing are applicable.

Environmental Concerns

Some degree of environmental remediation is almost always required when reusing buildings built before the mid 1970s. When buying real estate for any reason, one must conduct a thorough “due diligence test” before the closure of escrow or risk buying a property worth less than what was paid. Part of the due diligence process is to identify likely chemical contamination. While due diligence investigations can never entirely eliminate the risk of unexpected environmental remediation, most of the costs can be quantified during predevelopment and can be factored into the cost for the project.

Sources of Additional Information

For additional information on each of the major redevelopment options for industrial properties a few resources are listed below.

Option #1: Reuse Existing Buildings for Industrial Use

- Speak to local industrial brokers for input on which properties/buildings still have value and can be effectively reused for industrial uses.
- Real Estate Redevelopment and Reuse: An Economic Practitioners Guide by International Economic Development Council: www.iedconline.org

Option #2: Tear Down and Start Over

- Brownfield Redevelopment Case Studies by the California Center for Land Recycling on the publications page at <http://www.cclr.org/>
- Turning Brownfields into Greenbacks by Robert A. Simons: www.uli.org
- Brownfields Redevelopment by ULI-the Urban Land Institute: www.uli.org
- Business Park and Industrial Development by Anne Frej, Jo Allen Gause et al.: www.uli.org

Option #3: Adaptive Reuse of Obsolete Buildings

- Adaptive Reuse by ULI-the Urban Land Institute: www.uli.org
- New Uses for Obsolete Buildings by International Economic Development Council: www.iedconline.org

Appendix I: Environmental Analysis

Brownfield Site Remediation

Remediation refers to the cleanup of hazardous materials from soil and groundwater. There are two different classes of soil and groundwater remediation: In-situ, or on-site, and Ex-situ, or off-site. There are advantages and disadvantages to each class of remediation. In-situ cleanups are often preferred because they are cheaper. On the other hand, depending on the future use, excavating a contaminated area and transporting it to a remote site before cleaning it can often be more thorough. Ex-situ remediation can eliminate the risk of ground water contamination by taking the majority of the contaminants out of the ground before they can spread further. Descriptions of different remediation techniques can be found in the following section.

In-Situ Remediation

In-situ situations are limited because only the topside of the soil is accessible. In-situ remediation falls into three categories: washing, venting, and bioremediation. These remediation techniques vary in scope and cost. They can be as cheap and non-invasive as Phytoremediation (planting various species of plants that are adept at absorbing and remediating contaminants) and Bioremediation (using various Microbiotic organisms to digest and convert the contaminants in the soil to harmless substances). Other techniques of In-Situ remediation require intrusive methods such as placing treatment walls underground to control the flow of groundwater. At many Brownfield sites, such treatment walls may not be possible.

When a site has minimal contamination, in-situ remediation can be both cost effective and thorough. An environmental consultant will be a member of the decision-making team when it's time to identify the appropriate remediation technique(s).

Ex-Situ Remediation

Off-site facilities can more completely control the cleaning processes, however, the cost is usually higher. Soil is isolated in a controlled environment, without weather problems. Stronger chemicals can be used and acid leaching can be conducted in the ex-situ process without harming the environment. Ex-situ methods of addressing contaminated groundwater are to pump the water out of the ground to treat it.

Phase I Environmental Site Assessment

The first step that needs to be undertaken once there is a decision to move forward with Brownfield site rehabilitation is a Phase I Environmental Site Assessment. A Phase I Site Assessment is a preliminary evaluation of the potential for soil and/or groundwater contamination from past and present site activities. The assessment consists of a site history, a characterization of current activities and the condition of the property, and a report that includes an assessment of the likelihood that contaminants are present at the site. The proposed plan of reuse for the site is also helpful. Activities to be conducted during the initial survey of a site include¹:

¹ <http://www.clu-in.org/products/roadmap/home.htm>

- Establish the technical team and take advantage of the team's expertise to determine the adequacy of existing site information and identify potential data gaps
- Ensure that the Brownfield decision makers (such as regulators; citizens; property owners; and technical staff, such as chemists and toxicologists) are involved in the decision-making process
- Identify future plans for reuse and redevelopment as well as goals for the site
- Identify data that must be collected to support the goals of the site
- Determine whether contamination is likely through the conduct of an ASTM Phase I environmental site assessment or its equivalent. A records search is performed and the site is visited, but no sampling of soil or groundwater occurs. The effort includes the following activities:
 - Identify past owners and the uses they made of the property by conducting a title search and reviewing tax documents, sewer maps, aerial photographs, and fire, police, and health department documentation related to the property
 - Review and analyze city government and other historical records to identify past use or disposal of hazardous or other waste materials at the site
 - Review federal and state lists that identify sites that may have environmental contamination; such lists include, but are not limited to: 1) EPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) of potentially contaminated sites, 2) the National Pollutant Discharge Elimination System (NPDES) of permits issued for discharges into surface water, and 3) state records of "emergency removal" actions (for example, the removal of leaking drums or the excavation of explosive waste)
 - Interview property owners, occupants, and others associated with the site, such as previous employees, residents, and local planners
 - Perform a physical or visual examination of the site
- Review the applicability of government oversight programs:
 - Determine whether there is a state Voluntary Cleanup Plan and consult with the appropriate federal, state, local, and tribal regulatory agencies to include them in the decision-making process as early as possible
 - Determine the approach (such as redevelopment programs, the Superfund program, property transfer laws, or a state Brownfield program) that is required or available to facilitate the cleanup of sites
 - Identify whether economic incentives, such as benefits from state Brownfield programs, or federal Brownfield tax credits, can be obtained
 - Contact the EPA regional Brownfield coordinator to identify and determine the availability of EPA support programs and federal financial incentives
- Determine how to incorporate and encourage community participation:
 - Identify regulatory requirements for public involvement
 - Assess community interest in the project
 - Identify community-based organizations

- Review any community plans for redevelopment
- Identify factors that may impede redevelopment and reuse
- Begin identifying potential sources for funding site investigation and cleanup activities at the site, if necessary
- Examine unacceptable environmental conditions in terms of initial costs for site improvement and long-term costs for operation and maintenance - include potential cleanup options and constraints that may affect redevelopment, such as project schedules, cost, and potential for achieving the desired reuse
- Conduct work at the site and collect data as necessary to define site conditions or to resolve uncertainties related to the site

Phase II Environmental Site Assessment

The next step after the Phase I environmental site assessment is to undertake a Phase II Environmental Site Assessment. A Phase II Site Assessment involves testing soil, water and/or air samples to identify types, quantity and extent of site contamination. Certain reuses require much less remediation than others do; therefore, the reuse strategy should be determined prior to performing a Phase II Assessment.

Typical activities that may be conducted during this site investigation phase include:

- Identify the proper mix of technologies (such as field measurement technologies that characterize the physical and chemical aspects of the site and fixed laboratory sampling methods) that can facilitate site investigations and meet the required level of data quality:
 - Ensure that the laboratory has appropriate detection limits for analytes
- Determine the environmental conditions at the site (for example, by performing an ASTM Phase II environmental site assessment or equivalent investigation that includes tests to confirm the locations and identities of environmental hazards):
 - Conduct sampling and analysis to determine the nature, extent, source, and significance of the contamination that may be present at the site
 - Conduct sampling and analysis to fully assess the physical, geophysical, and ecological conditions and characteristics of the site
 - Interpret the results of the analysis to characterize site conditions
 - Determine whether and how (if applicable) the infrastructure systems (including existing structures) are affected by contamination
- Assess the risk the site may pose to human health and the environment. Consider the following exposure pathways:
 - For soil and dust, direct contact, ingestion, or inhalation
 - For water, ingestion and inhalation
 - For air, inhalation or ingestion
- Consider the use of a site-specific risk assessment to identify cleanup levels when that approach may result in more reasonable cleanup standards or when cleanup standards have not been developed
- Examine unacceptable environmental conditions in terms of initial costs for site improvement and long-term costs for annual operation and maintenance - include potential cleanup options and constraints that may affect redevelopment

requirements, such as project schedules, costs, and potential for achieving the desired reuse

- Revise assumptions about the site based on data collected at the site
- Begin consideration of sources of funding for site investigation and cleanup activities such as state Brownfield programs and federal tax credits:
 - Contact the EPA regional Brownfield coordinator to identify and determine the availability of EPA support programs and federal financial incentives
- Continue to work with appropriate regulatory agencies to ensure that regulatory requirements are being properly addressed:
 - Identify and consult with the appropriate federal, state, local, and tribal agencies to include them as early as possible in the decision-making process
- Educate members of the community about the site investigation process and actively involve them in decision making; consider risk communication techniques to facilitate those activities

Remediation or Cleanup Techniques

Once the contaminants have been identified, a remediation plan is developed to cleanup the site. The following is a list of techniques for remediation of Brownfields:

Methods ²	Advantages/disadvantages	Sustainable variations	Examples
Basic removal	A: Quick and effective, few liability issues for site. Start from new D: Issues for dumping site. Pollution is not mitigated. Can be expensive	Physical treatments, such as Soil washing can concentrate on pollutants in clays, leaving less to be removed.	Excavate; cart and dump, or remove and dump extractants.
Encapsulation ³	A: Quickest method, can be cheap in short term, potential for future in-situ remediation D: Not a long-term solution for non-biodegradables. Potential for leaks and future liability	Concurrent remediation and development possibilities with certain physical treatments and natural attenuation or bioremediation. Chemical and semi-permeable encapsulation are cost-effective techniques for certain pollutants	In-situ: using barriers [physical, permeable, reactive] and capping

² Methods and Examples setup from Dickinson, N. M. Chemosphere. "Strategies for sustainable woodland on contaminated soils" 41(1-2-), July 2000: 259-263.

Physical treatment	A: Thorough method, more “sustainable.” Extraction concentrates pollutants for remediation. D: Can be more site-intensive and take more time than basic removal. Pollutants must still be discarded or remediated.	Possibilities for concurrent remediation and redevelopment. Extractants can be remediated by other techniques.	Heat treatment [thermal desorbtion], soil washing, [ground water circulating wells, in-situ flushing, multi-phase extraction, air sparging, fracturing, soil vapor extracting], {incineration, solidification, vitrification}
Chemical treatment	A: Cheap and easy. Effective for certain pollutants D: May not be thorough for many pollutant types, such as heavy metals.	Can be done concurrent to redevelopment. Can be encapsulation method	Liming (ph) soil additives (zeolites, phosphates) [in- situ oxidation, permeable reactive barriers] {chemical stabilization\ Immobilization}
Natural attenuation	A: Natural method is cheapest for biodegradables. D: Must be planned in advance; can take many years to complete.	Bioremediation and phytoremediation are assisted forms of natural attenuation that are more efficient.	Dispersion, dilution, adsorbtion, volatilisation, biodegradation,
Bio-remediation	A: Very cost-effective and efficient for organic waste. D: Can take several years.	Can be used in conjunction with encapsulation and/or concurrent to redevelopment. Useful by-products such as biogas and compost.	Biodegradation by microorganisms [bioventing or biosparging (methyl mercury)], {assisted biodegradation in landfills, biogas generation}
Phyto-remediation	A: Promising for extracting heavy metals as well as degrading organics, extremely cost-effective. Appeals to public. D: Can take several years; must be planned in advance. Needs research.	Possibilities for extraction and reuse. Other by-products, such as biomass energy and commercial products a possibility.	Phytoextraction, phytostabilization [phytodegradation of organics]

³ Also: "Remediation technology descriptions: containment" EM (US department of energy office of environmental management) web printout outlines containment techniques

Glossary

ASTM: American Society for Testing and Materials

Biodegradable: Capable of decomposing under natural conditions

Bioremediation: Use of living organisms to clean up oil spills or remove other pollutants from soil, water, or wastewater; use of organisms such as non-harmful insects to remove agricultural pests or counteract diseases of trees, plants, and garden soil.

Biosparging: Biosparging is an in-situ remediation technology that uses indigenous microorganisms to biodegrade organic constituents in the saturated zone. In biosparging, air (or oxygen) and nutrients (if needed) are injected into the saturated zone to increase the biological activity of the indigenous microorganisms.

Bioventing: Bioventing is a common form of in situ bioremediation. Bioventing uses extraction wells to circulate air through the ground, sometimes pumping air into the ground

Environmental remediation: Environmental Remediation involves the removal or mitigation of radioactive and/or hazardous materials and pollutants in soil, fractured bedrock and groundwater.

EPA Brownfields Pilot grant: Pilots programs were planned to demonstrate the effectiveness of remediating and utilizing Brownfields sites and to initiate further private and governmental activities.

Escrow: An item of value, money, or documents deposited with a third party to be delivered upon the fulfillment of a condition. For example, the deposit by a borrower with the lender of funds to pay taxes and insurance premiums when they become due, or the deposit of funds or documents with an attorney or escrow agent to be disbursed upon the closing of a sale of real estate.

www.nmmfa.org/consumer/consGlosary_of_Terms.htm

Extractant: An agent used to isolate or extract a substance from a mixture or combination of substances, from the tissues, or from a crude drug.

Incineration: A treatment technology involving destruction of waste by controlled burning at high temperatures; e.g., burning sludge to remove the water and reduce the remaining residues to a safe, non-burnable ash that can be disposed of safely on land, in some waters, or in underground locations. The reduction of material mass and volume through combustion.

www.envirotools.org/glossary.shtml

Leaching: The process by which soluble constituents are dissolved and filtered through the soil by a percolating fluid.

Phytodegradation: It is the enhanced degradation of organic compounds in the rhizosphere of plants; when contaminated soils are planted, the process of degradation of organic pollutants, e.g. pesticides and hydrocarbons, is accelerated

Phytoextraction: It is the use of plants to extract metals from contaminated soils; it is based on the use of hyperaccumulators, a specialized class of plants able to accumulate metals above 1% in their above-ground parts.

Phytoremediation: Low-cost remediation option for sites with widely dispersed contamination at low concentrations

Phytostabilization: It is the covering of contaminated soils by adapted plants; it helps the stabilization of the soil surface, and reduces the risk of transport of pollutants to water streams and groundwater

Remediation: Cleanup or other methods used to remove or contain a toxic spill or hazardous materials from a Superfund site;

Sparging: Injection of air below the water table to strip dissolved volatile organic compounds and/or oxygenate ground water to facilitate aerobic biodegradation of organic compounds

Vitrification: the process of changing into glass or a glass-like substance by applying heat