Status Update of the Picturing El Paseo Project

City of Las Cruces

Community Development
Memorandum

To: Robert Garza, City Manager

Through: David Weir, Community Development Director DW

From: Carol McCall, Planner CM

Subject: July 11th Council Work Session Presentation on "Picturing El Paseo"

Date: July 6, 2011 M-11-136

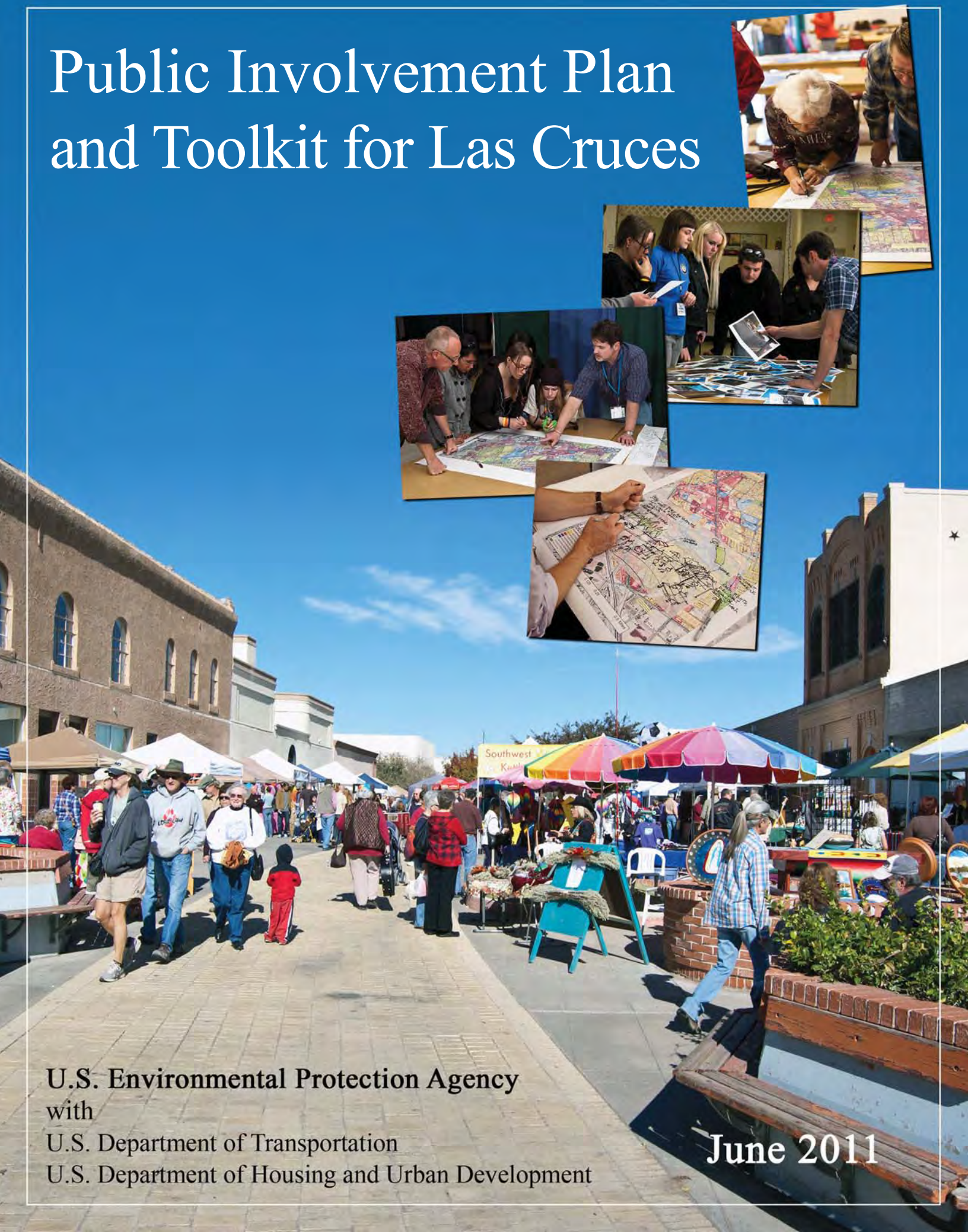
Picturing El Paseo is coming to a close and Monday's presentation will be a summary of the project's activities, including the Road Safety Assessment, Green Infrastructure Conference, the Targeted Brownfields Assessment, the final Public Involvement Toolkit and Plan that was completed by the EPA and its consultant team, and the public engagement process. The presentation will focus primarily on the public engagement component, the results of the public input and the analysis of the input. Staff will also suggest some next steps now that the project has wrapped up.

I am preparing a final report on the project, which will be completed in a couple weeks and will detail the information presented on Monday. Later this week, I will distribute a packet to the Councilors which will include the above mentioned documents.

If you have questions or need additional information, please contact me at X3209. Thank you!

Cc: Vincent Banegas, Planning & MPO Administrator
Brian Denmark, Assistant City Manager

Public Involvement Plan and Toolkit for Las Cruces



U.S. Environmental Protection Agency
with
U.S. Department of Transportation
U.S. Department of Housing and Urban Development

June 2011

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I. BACKGROUND

The city of Las Cruces is committed to developing a robust public participation model that includes deliberative planning and visioning processes. To that end, the city applied for technical assistance through the U. S. Environmental Protection Agency's Smart Growth Implementation Assistance program (see Appendix A for a description of the program). The goal was to develop a Public Involvement Plan and Toolkit that include strategies that invite and maintain the participation of all residents, especially ethnically diverse, low-income populations and others that have had limited to no previous involvement in community planning and design. Creative outreach and participation strategies that focus more on pictures than words were tested in two visioning workshops for the El Paseo corridor, a 1.7-mile corridor that extends southeast from Main Street in downtown Las Cruces to the New Mexico State University campus. The Public Involvement Plan and Toolkit summarize the process this project created and includes many, but not all, of the outreach and participation tools the project used to begin developing a vision for the El Paseo corridor. The plan and toolkit are intended to be used by city staff for all city efforts requiring public involvement.

Through the assistance, the city hopes to:

- Implement new public participation models that use multiple and non-traditional techniques to engage—and build collaborations among—the government, residents, and other stakeholders.
- Demonstrate the application of public participation tools to redevelopment efforts in the El Paseo corridor area that support fair choices in housing, mobility, and commercial activity.
- Develop options for how a public participation strategy or toolkit could be applied to the city's larger, comprehensive planning efforts.

EPA selected the city of Las Cruces because of the city's interest in developing inclusive public participation strategies that would help Las Cruces become a more sustainable and equitable community by:

- Promoting biking and walking as a safe alternative to driving.
- Reusing brownfields and vacant and underused parcels, thereby reducing pressure to develop on open space and agricultural land.
- Encouraging a mix of residential and commercial uses for residents and visitors regardless of race, ethnicity, or income level in the El Paseo corridor, as well as throughout the city.

- Incorporating landscaping into street design and site development to reduce flooding and improve water quality (commonly referred to as "green infrastructure").

Though written specifically for city of Las Cruces staff and decision-makers, the strategies and tools compiled in this document will be useful for many other communities wishing to expand the conversations about development to include populations that have often remained outside of decision-making process because of socioeconomic issues and language barriers. A more inclusive decision-making process can help communities identify and decide upon policies that encourage development that is good for the environment, the economy, public health, and the community.

"Picturing El Paseo" – A Snapshot

The El Paseo corridor was selected by Las Cruces staff as the location to test public involvement practices because of its potential to accommodate future mixed-use, development that would still serve the needs of existing residents and users. Staff from EPA, the U.S. Department of Housing and Urban Development (HUD), and the U.S. Department of Transportation (DOT), along with the EPA contractor ESMpr and city of Las Cruces staff, made up the project team that developed a public involvement process and selected (and sometimes created) specific involvement tools.

El Paseo Road is an active corridor with a mix of uses and a diverse population, many of whom rely on public transit or walking to get around, including low-income families, senior citizens, and high school and university students. The corridor is home to some of the highest commercial vacancy rates in the city. The design is heavily automobile-oriented and is dominated by strip malls separated from the street by vast, mostly empty parking lots. These design factors, combined with heavy automobile traffic, make the area unpleasant and dangerous to pedestrians.

In the spring and summer of 2010, city staff undertook extensive community outreach in preparation for workshops in the fall using the outreach tools described in Section IV. Strategies ranged from using social media and establishing a project website (www.picturingelpaseo.org) to more direct engagement with citizens through an activity called "Planners with Scanners." In this activity, city staff went out into the community to senior centers, coffee shops, and other places to gather stories about what El Paseo used to be—a vibrant street where one would go to "see and be seen."

The two "Picturing El Paseo" visioning workshops were held in the fall of 2010 to test outreach and participation strategies collected and developed by the project team. The first visioning workshop was held in October 2010. This workshop was for invited stakeholder groups to test participation techniques and to train city staff to lead the second visioning workshop. A photobook created to summarize the activities is included in Appendix B. The second public

workshop was held in November and was open to the public. In both workshops, activities were very visual: annotating maps, using visual preference surveys on computers, and artists drawing participants' ideas for El Paseo in real time. Participants were also broken into small groups to assemble photographs that city staff collected from people prior to the workshop into a collage that illustrated what they liked and did not like about the corridor area.

As part of the visioning process, the Federal Highway Administration (FHWA) funded a one-day road safety audit in October 2010. A road safety audit is a formal safety performance evaluation of an existing or future road or intersection conducted by an independent, multidisciplinary team. The El Paseo team included representatives from FHWA, the city of Las Cruces, Las Cruces Police Department, New Mexico Department of Transportation, Las Cruces RoadRUNNER Transit, and Las Cruces Municipal Planning Organization. The audit's preliminary recommendations included improving crosswalks and sidewalks and reducing the number of driveways off of El Paseo. The recommendations are generally consistent with the comments from participants of both workshops.

Finally, the city also hosted a green infrastructure workshop in August 2010. The workshop, developed by the city of Las Cruces staff with EPA assistance, was for local design and engineering professionals, city staff, and decision-makers. The purpose was to present and educate participants in green infrastructure practices appropriate for an arid climate such as Las Cruces. The workshop preceded the El Paseo visioning workshop and complemented the visioning efforts by educating city staff about green infrastructure techniques, which allowed them to include a session about these techniques in the visioning workshops.

The Picturing El Paseo workshops and associated activities provided the city with a rich collection of images and written comments that city staff began to analyze in early 2011. City staff and leaders hope that El Paseo can one day return to being the heart of Las Cruces.

II. INTRODUCTION

The Public Involvement Plan and Toolkit provide a framework for meaningful public engagement and the outreach and participation strategies necessary to build trust, excitement, and support among Las Cruces residents for a city project or initiative. When done correctly, public involvement creates the opportunity for mutually equitable outcomes, growth that increases economic vitality, and environmental stewardship. These initiatives can result in a more equitable, environmentally responsible, and economically healthy Las Cruces that is appreciated by residents and visitors.

Successful public involvement means including all voices—the traditionally represented as well as underrepresented groups. Traditionally represented groups include politicians, developers, philanthropists, and voting constituencies who routinely participate in civic affairs. Underrepresented groups include those who have, for a variety of reasons, not participated. These groups might include people with limited mobility, the learning impaired, non-English speakers, youth, those ineligible to vote, and the low income. These voices are important parts of a rich social dialogue and bringing them together can inform the planning process in ways that create more environmentally, economically, and socially sustainable outcomes for all participants.

Involving the community requires time and resources, but community involvement is worth the effort for several reasons:

- Everyone is treated equally.
- Incorporating substantive public input increases the likelihood that the public will support the project.
- Proactive public involvement can reduce or eliminate disputes by bringing public and stakeholder interests together at key project stages.
- The project can be improved by bringing an informed citizenry together with professionals.
- Development can be expedited with a clear mandate from the community.
- Trust is created between the city and the community.

The plan presented here outlines the necessary steps for establishing realistic goals, selecting appropriate outreach and participation strategies from the accompanying toolkit, evaluating the results, and sharing those results with the community.

III. PUBLIC INVOLVEMENT PLAN PROCESS

Though the specifics for each public involvement effort will depend on the city project or effort, the process to develop a Public Involvement Plan involves six steps:

1. Ask the key questions.
2. Set the goals and expected outcomes of public involvement.
3. Develop outreach and participation for the Public Involvement Plan.
4. Perform outreach and participation as outlined in your plan.
5. Evaluate the results against plan goals and outcomes.
6. Share the results.

1. Ask the Key Questions

The first step asks four key questions. These questions determine if the plan should move forward. If the answer to any one of these questions is "no," then the city should change the plan to address concerns or determine if the plan should be cancelled.

The four key questions are:

A. Do we have the right team?
B. Do we have the time?
C. Do we have the resources?
D. Does our plan meet legal requirements?

A. Do we have the right team?

This plan is intended for all city of Las Cruces departments, since public involvement is not under any single department's purview. All city-led projects benefit from public involvement whether it is a redesign of a particular street, a new housing development, a new park project, or even a new budget process. Many projects and initiatives will benefit greatly from cross-departmental cooperation. The team, though led by a particular department, could also include staff from other departments that have an interest in the outcomes. This would not only improve communication among departments but also expand the participation of community stakeholders that traditionally may have only been involved in the activities of one specific department. A diversity of voices will ultimately produce richer results.

B. Do we have the time?

The time needed for a public involvement process can vary greatly. Typically, three months of outreach prior to the involvement activities (e.g. public workshops) will be enough time to raise

awareness through the Internet and media and to engage community-based organizations and other interested parties.

C. Do we have the resources?

Sufficient resources are needed to put the plan into action, including time and staff to develop the plan, generate all materials needed, and perform the outreach and participation tasks. Tasks can be resource intensive, and a team of staff members or volunteers will probably be required.

Language considerations must be taken into account during the execution of the public involvement plan. All information should be available in both English and Spanish in both print form and through simultaneous verbal translation at meetings. Spanish-language information should be presented in the local dialect and use plain language free of technical jargon. Staff should consult with native speakers regarding each initiative governed by this plan to ensure that Spanish information adequately matches all English materials in content, form, and tone. In addition to producing materials in the two most commonly used languages in the area, the city should accommodate those who speak other languages. Showing the willingness to translate materials to make them more accessible will demonstrate to target audiences the city's commitment to engaging them, and they will hopefully appreciate the effort to communicate and be more interested in working with the city.

D. Does our plan meet legal requirements?

Regulations and laws at various levels of government affect public involvement, often requiring specific outreach activities or participation techniques. All legal requirements will need to be considered as the city implements the plan to create legally defensible processes. The following legal issues are among the requirements that the city might need to address, where appropriate, in the plan:

- Americans with Disabilities Act
- National Environmental Policy Act
- Federal Transportation Planning Requirements
- Environmental Justice Requirements
- Housing and Urban Development Requirements
- State of New Mexico Open Meetings Act
- State of New Mexico Inspection of Public Records

2. Set Goals and Outcomes

Setting goals for the plan is important to determine the activities that comprise the plan and to evaluate the success of public involvement. The goals and desired outcomes should be defined in

a document that all involved parties have a chance to review prior to involvement activities. If the goal is to create a community-driven design, an expected outcome would be substantive public input to give to designers. Writing these expected outcomes down makes evaluating the involvement process after the plan has been completed much easier.

3. Develop Outreach and Participation Activities

After asking the key questions and setting the goals, the city should develop specific outreach and participation activities. Outreach and participation tools are described in the toolkit in Section IV. Outreach activities should be well defined and include details such as target audience, budgetary implications, and who is responsible for developing and distributing outreach materials or performing outreach activities. Participation activities should be described so they can be understood by the public and should include details such as step-by-step instructions to perform the activity, the results that will be generated, and how the results will be used. Describing the outreach and participation activities creates a work plan that will guide the project team and become part of the public record of the project. Additionally, defining public involvement activities in writing clearly lays out the city's commitment to involving the public.

4. Perform Outreach and Participation Activities

After the public involvement plan for the project or initiative is crafted, it should be reviewed and discussed by the project team—those who will actually perform the outreach and participation tasks. Team members need to be realistic in understanding the amount of work involved in producing the outreach materials, distributing these materials, developing participation, and facilitating participation exercises. Additionally, team members will benefit from occasionally taking a step back, looking at the big picture, and ensuring that they are honestly listening to other people.

5. Evaluate the Results

Upon completing the involvement activities, team members should evaluate the input received and the process used. The results of this evaluation can be as important as any input gathered, as the lessons learned can help improve subsequent plans.

A successful public involvement process may result in a great deal of public input, often gathered through multiple methods. This input needs to be carefully examined and summarized. Then the input should be shared with the public, allowing the public to "double check" the results. This step also maintains transparency in the involvement process. All input should be

synthesized into a format that is clear and understandable to the public and to future staff and decision-makers to provide insight into the process used to gather it.

After synthesizing public input, the team should evaluate the entire public involvement process to identify lessons learned. This exercise will help the team determine which activities were most successful in meeting the goals. If the process and the results align with the expected outcomes and goals, the lessons learned can provide guidance for similar success in the future. If there is a disparity between outcomes and expectations or if goals were not met, then the city should consider how future attempts at similar involvement could be modified. Furthermore, even if outcomes are not what were expected, sharing this fact can build public trust by demonstrating that the city values honest, transparent communication and not just results.

7. Share the Results

As with all aspects of the public involvement plan, the performance evaluation should be well documented. By writing documents that describe the processes, the results, and the evaluation of those results and processes, the city creates a public record for each initiative. This public record helps staff look back on the process and understand the effort involved, the benefits realized, and the lessons learned. The documents also allow all members of the community to share in the project's success and facilitates public dialogue about the results of public involvement processes. The city can keep two-way communication open after sharing the results to give the public avenues to comment on these results. Comments regarding the results can steer decision-making, gauge public sentiment, and develop buy-in from stakeholder groups, other city departments, and the public.

Tailoring the Public Involvement Plan to a Project

To tailor this plan to a specific project, the team needs to determine what level of involvement is needed and set the goals accordingly. The goals outlined for the plan will drive the outreach and participation tools described in Section IV. Outreach requires identifying target audiences and specific strategies to reach these audiences. In participation, the techniques will change depending on the type and level of participation needed to develop the input the project needs. The Public Participation Spectrum (Figure 1) can be used to determine the level and type of involvement for the project. The spectrum can be used as a sliding scale of public involvement that starts with basic involvement that simply informs and goes up to empowering the public to make decisions. A particular project will fall somewhere on this scale, and the team can "slide" the outreach and participation activities to meet the needs of the project or initiative.

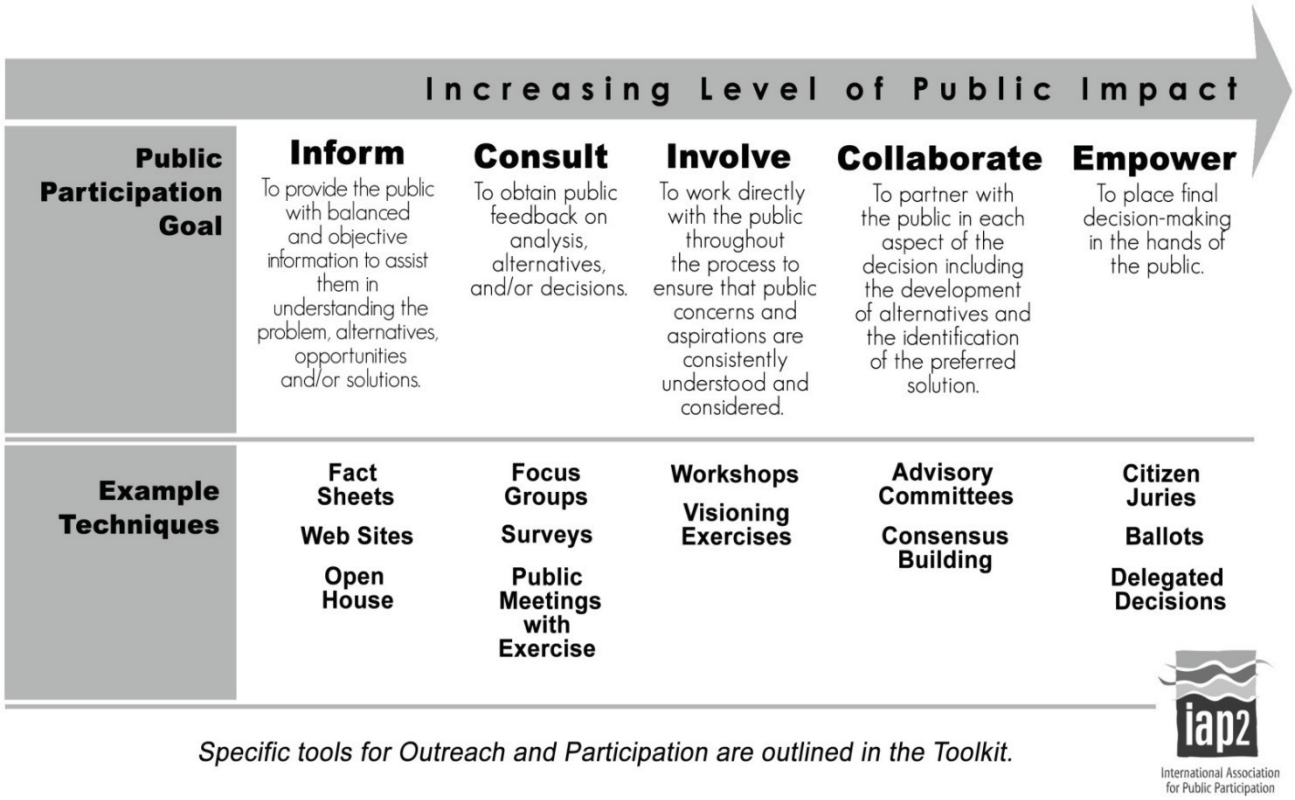


Figure 1. International Association of Public Participation (IAP2) Public Participation Spectrum (http://www.iap2.org/)

Summary

This public involvement plan process provides specific methods to reach out to and involve the public in municipal actions. This engagement allows interested parties to learn about and influence decisions that affect their community. Decision-makers can use the public involvement process to gauge public sentiment and gather helpful input for current and proposed policies and projects. The community has a better chance of reaching equitable outcomes when all parties are involved, informed, and included in decision-making. By using this tool for decision-making, a community can make decisions that balance economic vitality, equity among citizens, and environmental stewardship. By honestly and earnestly seeking to incorporate public aspirations, advice, concerns, and considerations, the city of Las Cruces creates a great opportunity to move forward in the best interest of all community members.

IV. TOOLKIT

Introduction

The toolkit contains outreach and participation tools the city could use in their involvement process. Like any tool used to repair or build something, the tools described in this section are designed to be used in concert with one another to accomplish the goals and objectives established for a particular public involvement effort. The toolkit includes:

- **Outreach tools** to inform and engage all segments of the population, including those who may be affected by an initiative, the general population, and those who have traditionally been underrepresented.
- **Participation tools** to create and document useful input.

Certain tools will prove widely useful and could be used frequently on multiple projects or on iterative efforts. Other, more specialized tools may not get used as often but are available in this toolkit should they be needed. As work moves forward, new tools may be needed to perform a specific function. These tools can be added to the toolkit using the New Tool Worksheet in Appendix B.

Upon completion of any public outreach or involvement effort, city staff should write a summary memo that documents and analyzes comments received. The memo should also document the tools used and the success of those tools in achieving the effort's goals. Lessons learned will help with subsequent outreach and involvement activities. To assist in evaluation efforts, the team can use the Evaluation Worksheet in Appendix B.

Finally, staff availability is crucial to the success of any outreach and participation efforts. As noted in Section III, a cross-departmental project team should be established at the beginning of any effort. On that team should be a primary staff contact who responds to public inquiries and forwards correspondence to the appropriate project team member for timely response.

Outreach Tools

Outreach tools help connect staff and elected officials with audiences to develop awareness of and participation in the project under consideration. These tools also provide basic project information and direct interested parties to additional resources that give more information. In general, implementing as many of these tools as possible will provide more information to the community about a project and the opportunities to become involved. Outreach should be two-pronged—focused outreach to specific residents and stakeholders whose input is needed for an

inclusive involvement and more general outreach to reach a broader audience. Focused outreach involves city staff going out into the community—reaching the businesses, religious institutions, schools, and social clubs of those residents who have, for any number of reasons, not been engaged in city planning and policy efforts. Involvement strategies to reach a broader audience include more traditional media campaigns (e.g., flyers, posters, websites, or radio spots) but also social media such as Facebook and Twitter. Although the "more is better" approach may be tempered by time and budget constraints, the city should go straight to the people to involve them.

A. Project Announcement

A project announcement is a simple, one-page description of the effort that the city is undertaking. It tells readers who is involved, what the project is, where and when it is happening, and how the process will work. It is developed in print and digital formats and released to the public, businesses, institutions, agencies, and members of the community who are targeted for outreach. The announcement should be translated into the predominant languages of the community. In print format, the announcement may take the form of a flyer, bulk mail piece, or poster. The digital format can be an image file or a PDF that is uploaded to a relevant website, used in social media, or sent by e-newsletter. Costs may be higher if the city uses professional graphic design, certain distribution methods, or multiple distribution methods.

B. Partnerships with Community-Based Organizations

Community-based organizations are groups that serve a broad range of community interests. Organizations include senior centers; civic groups; business organizations; community development corporations, churches and other faith-based organizations; service clubs; schools that provide English as a second language programs; service providers for youths, families, and persons with disabilities; and many others.

Community-based organizations provide the opportunity to connect with specific audiences and are an integral part of identifying and reaching out to underrepresented groups. The city can reach out to specific organizations to provide these groups with project information and encourage them to become involved. Should these groups have specific needs that might affect the involvement process, the city should clearly outline strategies to meet those needs. For example, organizations that represent people whose first language is not English should be invited to participate in exercises where they can receive information and provide input in the language with which they are most comfortable. Often, the organization can provide the venue and opportunity to meet with the group and perform a participation tool exercise, such as a coffee circle (described in the Participation Tools section).

C. School Partnerships

School administrations can publish information in school websites or newsletters or send email to distribution lists to engage students and their parents. Outreach activities can also be integrated into school curricula to inform students about a project through activities such as learning games and field trips. In high school, educators can create modules for classes and clubs involved in activities such as photography, computer science, art, civics, or creative writing. For instance, if the city of Las Cruces is undertaking a planning effort for a particular neighborhood, students of the local school could undertake a history project documenting the neighborhood. Or a multimedia class could produce short films documenting a "day in the life" of neighborhood residents.

D. Project Website

A project-specific website gives detailed and extensive information and allows for two-way communication. It should complement, not replace, other outreach and involvement efforts, since many people do not have access to the Internet or do not use it frequently. The website can stand alone or could be integrated into the city's existing website. If possible, the city should use an intuitive URL, such as www.[project name].org or www.[city name].gov/[project name]. Websites should be easy to access and to navigate and have translations available in Spanish or other appropriate languages.

E. Social Media

Social media and social networking websites include Facebook, Twitter, YouTube, and blogs. For any initiative, the city could create a social media strategy and invite target audiences (identified using city email lists or previously interested groups) to participate. It is important to choose the social media and networking platforms that have the best chance of reaching the intended audience. If the medium allows for public commenting, the project team should moderate those comments to ensure content is appropriate.

F. Electronic Newsletters

Email newsletters quickly and easily disseminate information to contact lists. While e-newsletters can be inexpensive if sent electronically through a listserv, an e-newsletter service may provide a more attractive-looking and engaging newsletter, but at an increased cost.

G. Media Campaign

A comprehensive regional media campaign often is the primary source of outreach to the broader community. A media campaign might include press releases, public service announcements, press conferences with community leaders, feature articles, or interviews, depending on the nature of the project and the resources available. To ensure media exposure, the city could buy advertisements but should do so strategically to keep costs low. Keeping a consistent media message across all channels requires generating and distributing talking points to project team members.

Participation Tools

Participation tools are designed to create a meaningful dialogue between city staff and the community. Each participation tool is a structured activity that allows participants to learn about the project, ask questions, and provide comments. The input that is generated in participation activities can be used for analysis, and create buy-in for a project. Similar to outreach tools, participation tools can be used in combination with one another to elicit input from target audiences through multiple avenues, which is especially useful when participation is desired from several different groups in a community.

The first set of participation tools described in this section focus on face-to-face meetings, with a particular emphasis on city staff going to places where a particular population already gathers. This effort pays off by demonstrating that city staff is committed to hearing the concerns of those groups who do not participate in more conventional public processes such as larger community meeting and workshops. These tools include ones that help participants create a vision for their community. Several of the visioning tools use pictures to tell a story. Using images is not only more fun for participants, but also more inclusive and equitable in that it relies less on words to express ideas and concerns. This technique is most helpful when working with community members who might not speak or read English well or with children and young people who find images more exciting than words.

The project website and social media described in the outreach section remain pertinent to participation efforts. A project-specific website can be used to disseminate information and gather comments. Additionally, social media websites can allow people to create and exchange content about a specific topic. Again, a major caveat is that not everyone has access to or the ability to use the Internet, so online tools should complement, nor replace, face-to-face participation tools.

A. Meeting with the Public

The term "meeting with the public" is used deliberately to differentiate from "public meeting." Meeting with the public means actively going into the community, talking with community members about a particular city initiative, and most importantly, *listening* to their concerns. Though potentially staff intensive, the time committed to informal meetings can build a significant amount of trust with the community. Feedback is likely to be more candid since staff is on the residents' "turf," and people can discuss their concerns in conversation rather than having to speak in front of a large group, which many people find intimidating. Furthermore, community members may feel more engaged in the process and thus be more willing to attend larger, traditional-format community meetings and workshops.

Meetings with Community-Based Organizations – As described in Section III, community-based organizations include senior centers, civic groups, business organizations, churches, service clubs, and others. Community-based organizations often host meetings that provide an opportunity for city staff to discuss particular city initiatives and projects. Meeting with groups at their regularly scheduled meeting times and in their format demonstrates a willingness to work with the group to listen and understand their position.

Coffee Circles – A coffee circle is a small meeting with a specific group, generally in an informal setting such as a person's home, a business, or a community center. To generate conversation, the facilitator can start by asking engaging questions such as "What was it like here when you were growing up?" or "Where is your favorite place in town to spend time, and why?" Once the conversation is flowing, the facilitator can get into the specifics of the project.

World Café – A world café is a specialized technique using a leaderless dialogue that simulates café-style conversation, where small groups engage in conversation to explore a given topic. To set up the meeting space, tables are placed around the room, each one accommodating four to six people. A host is stationed at each table to listen, take notes, and facilitate discussion, not to lead the group discussion. Each group should discuss the topic, listen to each other's viewpoints, and share their views. Participants switch tables periodically, while each host remains, allowing ideas to move around the room.

See: http://www.ilo.org/public/english/support/lib/knowledgesharing/meetings.htm

B. Public Meetings

More conventional meeting formats are described below. At all meetings, staff should provide sign-in sheets and comment cards. In addition to comment cards, participants could be asked to

fill out a card at the beginning of the meeting stating their concerns and motivation for attending the meeting. This is their "declarative statement." These cards could be posted on a bulletin board so others can read them. At the conclusion of the meeting, participants would be asked to revisit the cards and fill out the other side with "what they heard" and if their opinion on issues has changed. This before–and-after response will help city staff gauge how effective their messaging has been and where there is room for improvement.

Community Meeting – The community meeting is a structured meeting with an agenda during which the project team conveys information, listens to comments, and answers questions. It may include a formal presentation, a question-and-answer session, and an informal discussion period.

Open House Meeting – An open house meeting provides more opportunities for the project team and public to interact informally. An open house uses information stations staffed by project team members, allowing the public to talk with those involved in the project to learn more and provide input. This type of format is useful to gather input from participants who may not feel comfortable speaking in front of a group. It is good practice to have two team members at each station so one can focus on speaking with participants while the other records input.

Workshop – Workshops engage the public in interactive exercises to develop ideas and input. Workshops provide a venue for discussions of goals and alternatives, as well as creative problem-solving. Activities chosen for a workshop depend on the demographics of the group and what kinds of responses the staff hopes to elicit.

Design Charrette – A charrette is a collaborative design event that lasts multiple days. A multidisciplinary charrette team, consisting of consultants and sponsor staff, produces the plan. Stakeholders–those being anyone who can approve, promote or block the project as well as anyone directly affected by the outcomes–are involved through a series of short feedback loops or meetings. Most stakeholders attend two or three feedback meetings at critical decision-making points during the charrette. These feedback loops provide the charrette team with the information necessary to create a feasible plan. Just as importantly, they allow the stakeholders to become co-authors of the plan so that they are more likely to support and implement it. Charrettes takes place in a charrette studio situated on or near the project site. The charrette team first conducts an open public meeting to solicit the values, vision, and needs of the stakeholders. The team then breaks off to create alternative plans or scenarios, which are presented in a second public meeting usually a day or two later. The team then synthesizes the best aspects of the alternatives into a preferred plan that is developed in detail and tested for economic, design and political feasibility. The charrette concludes with a comprehensive presentation at a final public meeting.

See: http://www.charretteinstitute.org/

Expert Panels – An expert panel is a public meeting that mimics the "Meet the Press" format. A panel of media representatives or a facilitator interviews experts to show an issue from different perspectives. A neutral facilitator ensures a balanced discussion. The public can be involved in a question-and answer-session following the panel.

Focus Groups – Focus groups are a message-testing forum with selected members of a target audience. Testers show these individuals messages and interview them to gauge their reaction to those messages.

Fishbowl – A fishbowl is a small group of people, generally between five to eight individuals, seated in a circle, having a conversation in full view of a larger audience. The fishbowl is most often an open discussion, with public officials, decision-makers, or stakeholders taking "permanent" chairs at the table, with several chairs open to members of the audience who want to sit down and discuss an issue. Audience members can move to the central table as issues are discussed and when the discussion moves to another issue, that individual returns to the audience, opening a chair for someone else. This format allows the public to participate in a conversation that can answer questions and aid in understanding the decision-making process, especially where controversial or "hot button" issues are concerned. While significant moderation is not needed, a facilitator may help the discussion progress smoothly.

See: http://www.ilo.org/public/english/support/lib/knowledgesharing/meetings.htm

Webinar – A webinar is a meeting that is presented online. Currently, technology allows for public meeting "webcasting," or broadcasting via the Internet, and two-way electronic communication. While webcasting can be relatively simple, participatory techniques are difficult to implement in a webinar format. As technology improves, webinars may emerge as an increasingly useful tool.

C. Visioning

Visioning exercises can take several forms and can be incorporated into the meeting formats previously listed. Visioning tools can be used to solicit public ideas in the initial stages or to help shape components of the project as it evolves. At each stage, if the results of the visioning process are shared with the public for ongoing feedback, the public is reassured that their input shapes the community vision to the greatest degree possible. Visioning performed early and throughout the life of the project helps ensure that the public vision is realized as the project moves through the municipal decision-making process towards implementation. Material gathered can be synthesized in various ways, which will depend largely on the anticipated use of the input when the exercise is designed. All input should be treated equally and collected in such

a way that the public involvement process moves forward and is informed by this input. The input should include a detailed explanation of the visioning exercise that aided its development.

Shared Perspectives – A shared perspective exercise uses a photograph or image of an existing condition and an overlay sheet of trace paper on which an artist can draw. The artist or another member of the team talks with a participant about the particular issues illustrated in the photos and elicits ideas about what the participant would like to see there instead. The artist captures these ideas immediately and draws them on the trace paper on top of the photograph in front of the participant. In essence, the artist is serving as the hands for the participant. This type of activity generates a lot of excitement, and participants can be invited to do their own drawings if they want. The result is a rich set of images that can be categorized according to common visions that emerge and discussed afterwards in a meeting of all participants.

Mapping Exercise – A mapping exercise uses a map or aerial photograph to help develop input regarding a specific geographic area, location, or corridor. The input can be free flowing and cover a range of topics, or it can be targeted to gather input on a specific topic, idea, or issue. In cases where a discussion of alternatives is part of the process, two alternative maps can be used to develop input. Mapping exercises can be performed in various ways. One way involves printing large maps and encouraging the public to draw or write their ideas on the maps themselves. This input can then be scanned, photographed, or catalogued. A facilitator is present to explain the map, answer questions, guide input gathering, and keep the discussion focused. Some participants may have difficulty reading maps at first, so it is helpful to have printed eye-level photographs of places depicted in the map to help participants get their bearings. Another method is to ask participants to draw their own maps based on their knowledge of the area of interest. These maps, though likely crudely drawn, can be valuable in highlighting how the participant experiences the area.

Photovoice – Photovoice is a participation tool developed at the University of Michigan. The underlying principles are that that images teach, and pictures can influence policy. It is a facilitated process where participants use photographs to explain how they perceive their current circumstances and also explain what they like and do not like. Pictures can be collected through a variety of means; participants can bring their own photos to a workshop event or upload photos to the project website prior to an event for city staff to print. Another method is distributing disposable digital cameras before the event; staff can download the images at the meeting and print the photos on site. Alternatively, staff could distribute cameras at the event and take participants on a tour of a project area, allowing them to note their likes and dislikes with pictures rather than words. The “comments” gathered through Photovoice are images that are assembled by participants (with assistance from a facilitator) into collages. These images can be presented as a public art display to generate community awareness of issues, to create a collage or educational tool, or to generate a lively discussion.

See: http://heb.sagepub.com/content/24/3/369.short

Visual Preference Survey – In a visual preference survey, participants look at two pictures of a similar place or element—e.g. a street with on-street parking versus a street without parking, or an stream with a pathway along it versus one without a path that looks more natural. Participants are then asked to select which image they prefer. Surveys can be taken on computers or using display boards and a ballot sheet. Public feedback developed through the visual preference survey is most helpful in determining public opinion related design aesthetics.

Computer Simulations – Computer simulations are an increasingly useful visioning tool in helping the public understand choices, see possible future scenarios, or see how their input may be used. At a basic level, a computer simulation is similar to the shared perspective exercise in showing simple before-and-after representations of how a project might look when complete based on participant comments. Simulations are developed by a professional graphic designer or architectural renderer and can be time-intensive, depending upon the desired quality of the final image. The most basic image looks like a photographic collage. This exercise therefore is best suited to a multi-day charrette where participants can see the image or images evolve over the course of the event. Typically, the designer will take these images back to his or her office to create a more realistic image.

Keypad Polling – Keypad polling is where participants use handheld remote devices that allow them to vote on polling questions at a public meeting. The exercise is included in the visioning section because the results of the polling are shown immediately on a screen. The facilitator uses the outcomes to guide discussion. Polling is anonymous so those who do not feel comfortable publicly voicing their opinions can still share their thoughts.

D. Tours and Audits

Tours are facilitated group excursions that help participants familiarize themselves with a project area. Audits are similar but involve developing inventories to provide quantifiable data regarding the typical public experience. Both activities have city staff, designers, officials, and community participants walking through their community to identify issues that affect the public. Although participants may feel that they are already familiar with the study area, a facilitated tour or audit helps them see the area with a new perspective. Walking tours are most helpful when a study area is relatively compact or when a workshop's goal is assessing the pedestrian experience of a street or neighborhood. For large study areas, vans or buses may be needed.

E. Simulation Games

Simulation games are exercises that lay out a set of real or hypothetical conditions and ask participants to simulate a decision based on those conditions. While these games may be resource intensive to develop and test, simulation can be an effective participatory technique.

Budget Exercise – The budget exercise is a method to develop a vision while working with budgetary constraints. The exercise gives participants hypothetical amount of money and asks them to choose how to spend the money. This exercise encourages people to prioritize wants and needs in a scenario that mimics what decision–makers face. The budget exercise can be performed in various ways, generally dictated by the meeting and the initiative. When possible, budgetary constraints and alternatives or choices should mimic the applicable scenario facing decision-makers. The budget exercise can use a worksheet, or a Monopoly-style game, representing budget dollars. The budgets created in this exercise will help project organizers better understand public priorities and spending concerns. These conclusions should be documented for later reference to substantiate decisions that might be made about the project.

Wikiplanning — Wikiplanning offers an integrated approach using technologies that are increasingly available to the public. Using the Wikiplanning tools, residents are invited to log into their community's project website and then are led through a series of activities throughout the project life. These activities include a mix of project-specific, multimedia learning sessions, online chats, message boards, surveys, and podcasts offering walking tours through the project's principal sites. Although some sessions, like chats, would occur in real-time, most activities can be arranged around participants' schedules.

See: http://www.wikiplanning.org/index.php?P=virtualcharrette

V. Appendices

Appendix A – EPA's Smart Growth Implementation Assistance (SGIA) Program

Appendix B – Picturing El Paseo Photobook

Appendix C– Worksheets

- Evaluation Worksheet
- New Tool Worksheet

Appendix A

EPA's Smart Growth Implementation Assistance Program (SGIA)

Communities around the country want to foster economic growth, protect environmental resources, and plan for development. In many cases they need additional tools, resources or information to achieve these goals. In response to this need the Environmental Protection Agency's Office of Sustainable Communities launched the Smart Growth Implementation Assistance Program in 2005 to provide technical assistance through contractor services to selected communities. EPA assembles teams of specialized consultants, bringing together expertise that meets a particular community's needs. While working with community participants to understand their aspiration for development, the teams bring experience from working in other parts of the country to provide best practices for consideration by the assisted community. The goal of the program is to help participating communities attain their goals, while also producing a resource (such as a report or set of guidelines) that can be useful to a broad range of communities facing similar challenges.

The Smart Growth Implementation Assistance Program is designed to help communities achieve growth that supports economic, community and environmental goals. People in communities around the country are frustrated by development that gives them no choice about driving long distances between where they live, work and shop; that require costly expenditures to extend sewers, roads and public services to support new development; that uses up natural areas and farmland for development while land and buildings lie empty in already developed areas; and that makes it difficult for working people to rent or buy a home because of development that focuses only on one or two costly housing types. Smart growth strategies create new neighborhoods and maintain existing ones that are attractive, convenient, safe and healthy. They foster design that encourages social, civic and physical activity. They protect the environment while stimulating economic growth. Most of all, they create more choices for residents, workers, visitors, children, families, single people, and older adults—choices in where to live, how to get around, and how to interact with the people around them. When communities undertake this kind of planning, they preserve the best of the past while creating a bright future for generations to come.

More information about the program, including information on how to apply and links to reports from past recipients can be found at http://www.epa.gov/smartgrowth/sgia.htm.

EVALUATION WORKSHEET

Project Name:

Public involvement goals:

Did the plans meet the goals? Yes ☐ No ☐

Please explain how:

Expected outcomes:

Did the project meet outcomes? Yes ☐ No ☐

Please explain how:

What lessons learned can be used on future projects?

NEW TOOL WORKSHEET

Tool Name: _____

Tool overview and application:

_____
_____
_____
_____
_____
_____

Comment gathering:

_____
_____
_____
_____
_____
_____

Key points for using this tool:

_____
_____
_____
_____

Tool benefits:

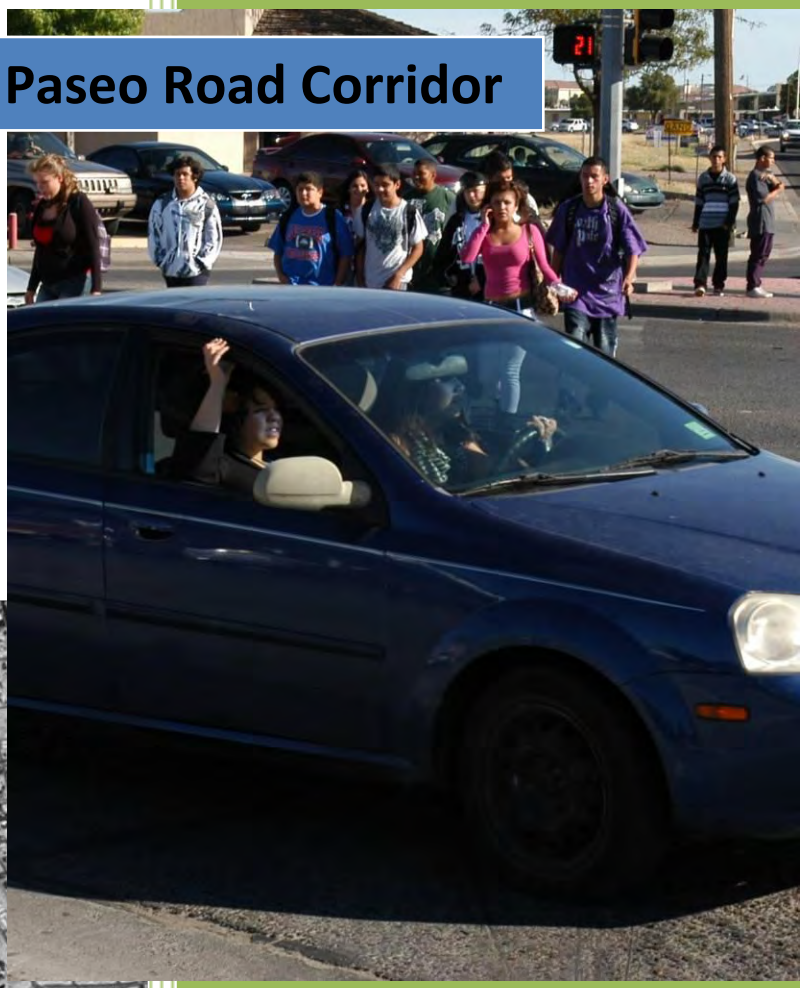
_____
_____
_____
_____

Project(s) where tool has been used:

_____
_____
_____

2010

Road Safety Assessment: The El Paseo Road Corridor



October 26-27, 2010

By Dan Nabors & Mike Sawyer
Vanasse Hangen Brustlin, Inc.

Introduction

Scope and purpose of the Road Safety Assessment (RSA)

The objective of this study was to complete a Road Safety Assessment (RSA) on El Paseo Road from University Avenue to Main Street with particular emphasis on the high severe crash intersections of Boutz Road, Idaho Avenue, and Main Street as well as the Las Cruces High School for multiple modes of transportation. The Federal Highway Administration (FHWA) defines an RSA as a "formal safety performance evaluation of an existing or future road or intersection by an independent, multidisciplinary team". The RSA process has been shown to be effective in reducing crashes and fatalities on roadways in the United States. In fact, RSAs have been identified by FHWA as one of its nine proven safety countermeasures.

The El Paseo Road corridor is 1.7 miles in the center of the City of Las Cruces, NM and provides a critical north-south link between Downtown and the New Mexico State University. A map showing the general location of the project study area is shown in Figure 1.

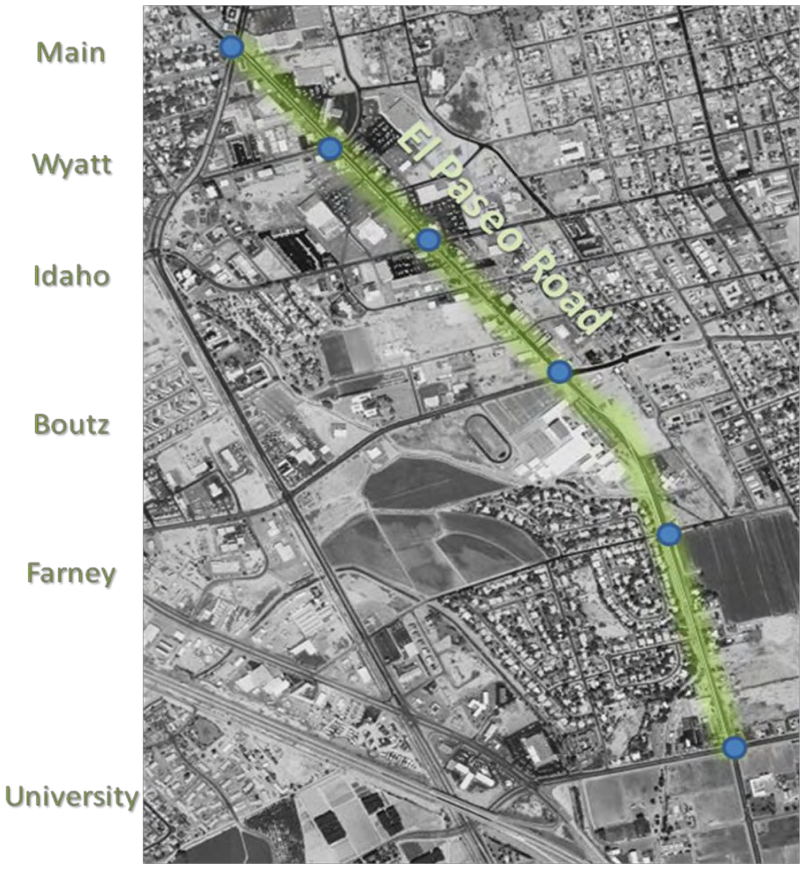


Figure 1: RSA Study Area: El Paseo Road from Main Street to University Avenue

Identification of project

The El Paseo Road corridor was selected as one of four corridors in the United States to receive a technical assistance grant from the Environmental Protection Agency (EPA). In addition, it is the only corridor to have the EPA partnering with the Department of Housing and Urban Development (HUD) and the FHWA. The goal is to achieve a comprehensive planning approach and provide a potential working model for the agencies to use in the future. Overall, the technical grant provides for a study to guide the planning process such that a shared vision can be developed for what El Paseo Road will become through revitalization. One of the end products will be to develop and implement a design overlay district for El Paseo Road that will create a corridor plan for economic development, housing, land use, and transportation. From November 18-20, 2010, the City of Las Cruces hosted a Visioning Session to gain stakeholder input. Over the next two years, the intersection of El Paseo Road and Idaho Avenue will be rebuilt and the entire corridor will be resurfaced. Finally, Las Cruces High School has a significant presence, plans to renovate and expand its facilities, and currently enrolls 2,400 students.

RSA Team, affiliation and qualifications

The RSA Team consisted of nine representatives with planning, engineering, and enforcement backgrounds from the New Mexico Department of Transportation (NMDOT), the Las Cruces Metropolitan Planning Organization (MPO), the City of Las Cruces, the Las Cruces Police Department, Las Cruces Roadrunner Transit, the Federal Highway Administration (FHWA), and Vanasse Hangen Brustlin, Inc. (VHB).

Guidelines Used

- FHWA Road Safety Audit Guidelines (Publication FHWA-SA-06-06)
- Pedestrian RSA Guidelines and Prompt Lists

Information Sources

- Traffic Crash Data (2009-June 2010)
- Traffic Volume Data (2007-2009)
- AM/PM/Mid-Day Turning Movement Traffic Counts (2008-2009)
- Traffic Speed Data (2010)
- Idaho Avenue Road Diet Study (2010)
- SYNCHRO Phasing (2010)
- Traffic Signal Timings (2010)
- Field Reviews (2010)
- Household Mobility, Income, and Poverty Data (2010)
- Interviews with local RSA Team Members
- Interviews with Director of Public Works, Michael Johnson, City Traffic Engineer, Dan Soriano, and Public Works Project Development Administrator, Louis Grijalva

- Interviews with Las Cruces Public Schools Assistant Superintendent of Operations, Herb Torres, Las Cruces High School Assistant Principal, Lorraine Paz, and LCHS Lead Architect

Key Safety Challenges /Observations from the Information Sources

From the data review, the El Paseo Road corridor has significant access management, congestion, and safety issues, particularly from the Las Cruces High School area to the north towards Main Street.

Access Management

Access Management issues were most acute at the signalized intersections of Boutz Road, Idaho Avenue, and Main Street. The number and condition of entrances from Boutz Road to Main Street created an inconsistent corridor that may not meet driver expectancy. Crash data showed that the number of driveways created undue driver confusion and pedestrian exposure to vehicle conflicts. Because the cross-slope of many of the driveways caused vehicles to bottom out, many drivers drastically decelerated upon entering a driveway resulting in rear end crashes. In addition, multi-threat crashes occurred whereby one vehicle in the right through lane would let a vehicle out of an entrance, only to have a through vehicle in the left lane collide with the entering vehicle. Pedestrian exposure to vehicle conflicts was intensified by the number of redundant and wide driveway entrances.

An excellent access management practice reduces potential for crashes and maximizes existing road capacity by limiting the number of access points (median crossovers and commercial driveways), carefully spacing access points, and designing the roadway access points to serve all users (drivers, pedestrians, bicyclists, and transit riders). Specifically, access management can help:

- Reduce the number of crashes.
- Reduce traffic congestion and maintain steady traffic flow.
- Reduce the need for additional lanes.
- Enhance the value of private land development.
- Revitalize business districts.
- Contribute to more livable communities.
- Support community goals along corridors (e.g., walkability /bikeability, transit accessibility).
- Enhance corridor aesthetics.

Congestion

El Paseo Road carries an average of 19,000 (AADT) vehicles per day. It is a retail corridor and has heavy turning movements to access an excessive number of driveways during the hours of business operations, particularly from 11AM to 6PM. Split phasing is used at Idaho Avenue and El Paseo Road creating additional congestion and delay during the peak periods. Protected-permissive left turn phasing is utilized at a number of intersections to accommodate heavy traffic volumes. Poor access management has been shown to reduce capacity and increase congestion due to unexpected vehicle maneuvers and from the emergency response efforts from increased crashes. Peak pedestrian use

during lunch and school dismissal overwhelmed the pedestrian storage at the intersection of Boutz Road and El Paseo Road.

Conflicts

Many conflicts between motorists, pedestrians, and cyclists were identified. Many land uses surrounding the corridor add significant pedestrian traffic consisting of young, aged, and pedestrians with disabilities. Las Cruces High School generates heavy peak pedestrian volumes during lunch and dismissal. There is low income housing provided by the Housing Choice Voucher Program along with many senior assisted facilities centered on Idaho Avenue. This program is a type of Federal assistance provided by the United States Department of Housing and Urban Development (HUD) dedicated to sponsoring subsidized housing for low-income families and individuals.

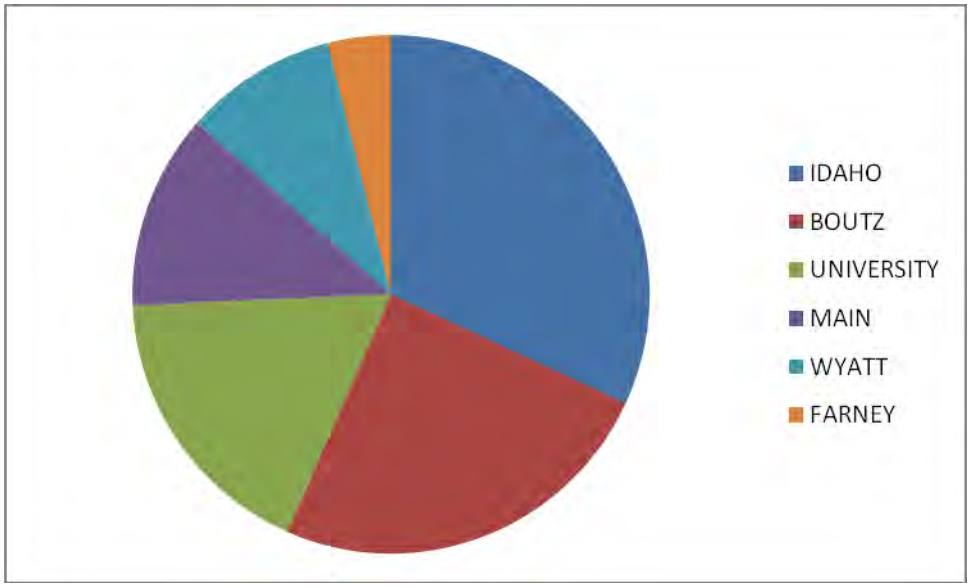
Crash Analysis

Overall, the crash data revealed:

- 54 severe crashes resulting in death or injury occurred from January 2009 to June 2010 and were reviewed:
    - Two thirds of the severe crashes occurred at the intersections.
    - Most severe intersection crashes occurred at Boutz Road, Idaho Avenue, and Main Street.
    - Distracted driving was prominent in the severe crash narratives.
    - Sun glare and signal head visibility are prominent issues from the crash reports.
    - Mid-block traffic crashes were most prevalent from 11AM to 6PM as El Paseo Road is primarily a retail corridor.
- 1 out of 4 severe crashes involved an unlicensed driver; Half of the 110 midblock crashes were classified as hit & run. This is an extraordinarily high number of hit and run crashes.
- 222 Property Damage Only Crashes during same time period.

THOROUGHFARE INTERSECTION CRASH RATES

Street	Intersecting Street	Crashes 2004-2006	Average 2004-2006	Crash Rate	Traffic Volume
EL PASEO	IDAHO	97	32	3.05	29055
EL PASEO	BOUTZ	75	25	2.05	33456
EL PASEO	UNIVERSITY	54	18	1.45	33955
EL PASEO	MAIN	37	12	1.16	29206
EL PASEO	WYATT	29	10	1.16	22737
EL PASEO	FARNEY	12	4	0.60	18292



Field Reviews / Site Summaries

El Paseo Road at University Avenue

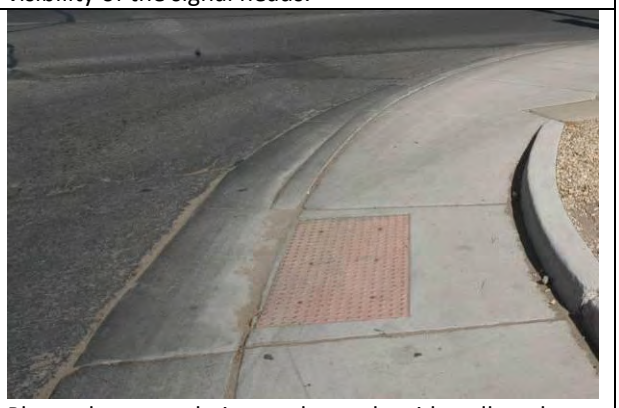
- Key Observations
  - Good sidewalk and street trees.
  - Traffic signal head mounted on pole will help increase conspicuity of the signal when sun glare is a factor.
  - Convention Center traffic to increase with opening; hotel will also be developed on-site.
  - Pavement markings are worn (crosswalks, longitudinal lines, lane control arrows, double yellow, stop bars, etc.).
  - Nominal safety with traffic signal conspicuity and visibility.
  - Tire tracking across curb ramps; large trucks crossing into pedestrian storage.
  - Wide radii and little pedestrian storage with higher turning speeds.
  - Crosswalk instructions facing wrong direction NE quad.
  - Bank driveway sight distance is obstructed by landscaping.
  - North crosswalk is not at accessible standard.
  - Sidewalk obstructions (Poles).
  - Shared multi-use path ends creating an awkward transition in Southeast quadrant.
  - Bicycles use the sidewalk in Southeast quadrant and there is not enough space for multiple cyclists to occupy this corner with pedestrians.
  - Pedestrian signal head in Southeast quadrant is not in cone of vision of pedestrian.
  - Pedestrian push button in Southeast quadrant is not near crosswalks.
  - Sidewalk access to land use (bank).
  - Westbound left turn lane will back up for peak hour and eastbound left turn stops in through lane.
  - One street name sign is backlit and not functioning.
- Pertinent Crash / Traffic Data Discussion
  - The intersection has an entering daily traffic volume of 33,955 AADT and averages 18 crashes per year and is the 14th highest for traffic crashes in the City.
  - One pedestrian fatality crash occurred here with DWI and the pedestrian crossing against the traffic signal.
  - Two non visible injury (Type C) Crashes- One rear-end and the other Left Turn FTY.
  - Level of service (LOS) is C or better.

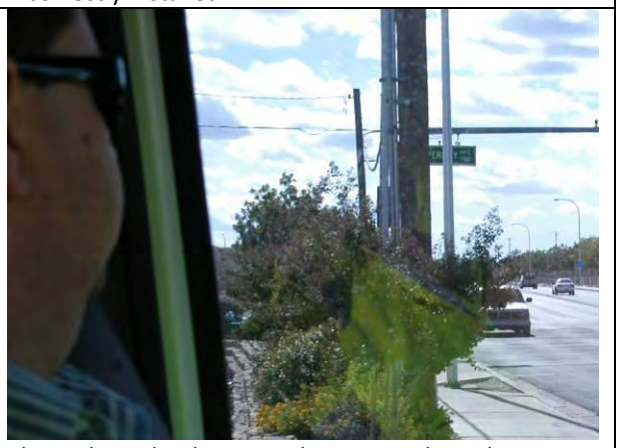
- Aerial Map: El Paseo Road at University Avenue

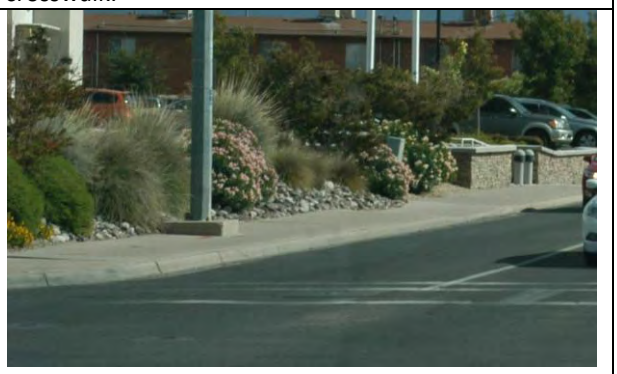
Note: Aerial Map does not include recent Convention Center construction in the Southwest quadrant.

El Paseo Road at University Avenue:

Summary of Safety Issues and Suggestions for Existing Facilities

Safety Issue	Suggested Improvement / Timeframe	Photos
Pavement Markings are worn (crosswalks, longitudinal lines, lane control arrows, double yellow, stop bars, etc.).	***Short Term-*** Repaint Pavement Markings with a durable thermoplastic marking including crosswalks, lane control arrows, longitudinal lines, stop bars, yield lines, and double yellow.	Photo shows worn pavement markings with little retroreflectivity.
Signal Conspicuity and Visibility - Two traffic signals meet nominal safety required by the MUTCD; however, modern signal practice would have a traffic signal for each lane to meet substantive safety practice to enhance traffic signal conspicuity and visibility.	***Long Term*** – Modernized existing traffic signal design to place a signal head on a mast arm over each travel lane.	Photo shows one traffic signal head on the mast arm. This configuration may be less conspicuous to motorists especially when large vehicles may obstruct visibility of the signal heads.
Large Curb Radii - Tire tracking across curb ramps; large trucks crossing into pedestrian storage; wide radii with higher turning speeds and little pedestrian storage.	***Mid-Term -*** Wide turning radii and high travel speed have created little storage area and wider crossings for pedestrians. Need to create more storage and slow turning vehicle speeds by lowering turning radii and reducing lane widths. Turning radii below 25' are considered to be more pedestrian friendly.	 Photo shows truck tire marks on the sidewalk and little room for pedestrians to wait to cross the street from the new convention center. Pedestrians not able to wait near the curb may need more time to cross the street.

Pedestrian Push Buttons - Crosswalk instructions facing wrong direction Northeast quadrant.	***Short Term*** **–** Install crosswalk instructions facing proper direction.	Photo shows pedestrian crosswalk instructions incorrectly installed.
Sight Distance - Bank driveway sight distance is obstructed by landscaping.	***Short Term*** **–** Trim bushes and trees in Northeast quadrant of intersection approaching bank entrance.	 Photo shows landscaping obstructing the sight distance of a driver at the bank driveway.
Sidewalk Obstructions - North crosswalk is not at accessible standard due to pole placement.	***Mid-Term*** **–** Create an Accessible Pedestrian Design by acquiring proper right-of-way and relocating traffic signal and light poles.	Photo shows light and signal poles obstructing the sidewalk leaving no room for wheelchair access

Southeast Quadrant - Side path ends creating an awkward transition; bicycle storage area in Southeast quadrant is inadequate; pedestrian signal head in Southeast quadrant is not in cone of vision of pedestrians using eastern crosswalk; pedestrian push button in Southeast quadrant is not near crosswalks.	***Mid-Term*** **-** Move pedestrian signal and push button in the Southeast quadrant to be closer to the cone of vision and reach of pedestrians crossing the eastern crosswalk. ***Long Term*** - Convert bicycle side path to on-street bike lanes and narrow travel lanes to 10.5'.	 Photo shows the end of the shared use side path. Photo shows improper side path termination and long distance to the pedestrian push button from the crosswalk.
Sidewalk access – There is no sidewalk link from public sidewalk to land use (bank).	**Mid- Term** - Create policy to guarantee pedestrian access that is safe and convenient from the public sidewalk to new development.	 Photo shows no sidewalk access to private property.

Access Management - WB left turn lane sometimes backs up during peak periods and eastbound University Avenue left turns stops in through lane.	**Long Term** – Construct raised center median to 95th Percentile Queue in all directions at all signalized intersections.	Photo shows eastbound University Avenue drivers stopping in left through lane to turn left into private apartments.
Street Name Signs - Backlit sign not functioning.	**Short Term** - Replace backlit street name signs where not functioning.	Photo shows an example of backlit street name sign.

El Paseo Road at Farney Lane

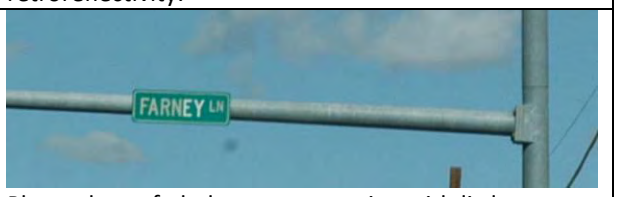
- Key Observations
  - Good turning radii.
  - Good conspicuity of signals.
  - Pavement Markings are worn (crosswalks, longitudinal lines, lane control arrows, double yellow, stop bars, etc.).
  - Street name signs were not retroreflective and small lettering is difficult to read.
    - Sidewalk Obstructions (Poles)
  - Curb and sidewalk is not continuous on 6 of 8 approaches.

- Pertinent Crash / Traffic Data Discussion
  - The intersection has an entering daily traffic volume of 18,292 AADT and averages 4 crashes per year.
  - Two Non-visible Injury (Type C) Crashes- One rear-end and the other an angle.

- Aerial Map: El Paseo Road at Farney Lane

El Paseo Road at Farney Lane:

Summary of Safety Issues and Suggestions for Existing Facilities

Safety Issue	Suggested Improvement / Timeframe	Photos
Pavement Markings are worn (crosswalks, longitudinal lines, lane control arrows, double yellow, stop bars, etc.).	***Short Term*** **-** Repaint pavement markings with a durable thermoplastic marking including crosswalks, lane control arrows, longitudinal lines, stop bars, yield lines, double yellow centerline, etc.	Photo shows worn pavement markings with little retroreflectivity.
Street Name Signs were not retro-reflective and small lettering is difficult to read.	***Short Term*** **-** Replace street name sign with larger 9-12 inch blade.	 Photo shows faded street name sign with little retroreflectivity.
Sidewalk Continuity - Curb and sidewalk is not continuous on the majority of intersection approaches; Sidewalk obstructions (poles) cause non-compliant access for pedestrians with disabilities.	***Long Term*** - Construct sidewalks and remove obstacles.	Photo shows sidewalk in the Southeast quadrant and lack of a sidewalk or pedestrian landing in the Northeast quadrant.

Las Cruces High School

- Key Observations
  - Recommend close communication between the City and School Board to resolve any transportation safety issues related to the redevelopment of Las Cruces High School (LCHS).
  - Need to minimize crossing distances, vehicle speeds, and volumes were large pedestrian movements occur.
  - Need to get students safely across the street and manage vehicular traffic leaving school, particularly the left turns.
  - Need to match traffic conditions with appropriate temporary traffic control. For example, there are 20 minutes of congestion due to LCHS dismissal in the afternoon.
  - Multi-threat pedestrian / vehicle crashes at the intersection of Boutz Road and El Paseo Road.
  - Peak student pedestrian demand overwhelms the design capacity of Boutz Road & El Paseo Road.
  - Midblock crosswalk near Lee Whisman across El Paseo Road is not accessible and needs to meet driver expectancy.
  - Midblock school crosswalk is not placed in ideal location to facilitate traffic flow on El Paseo Road and student pick-up.
  - No yield lines to mitigate multi-threat condition in crosswalk.
  - Sidewalks are missing on both sides of the road.
  - Left turns out of student drop-off onto northbound El Paseo Road.
  - Short school zone at Las Cruces High School.
  - Transit vehicles, approximately once per hour, block through lanes.
  - Exiting drivers are using continuous left turn lane as acceleration lane.
  - Drivers are stopping on El Paseo Road during the morning drop-off.

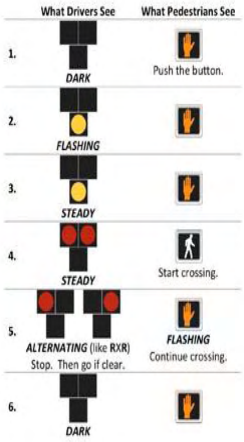
- Pertinent Crash / Traffic Data Discussion
  - Pedestrian traffic is heavy during the morning drop-off, lunch time, and afternoon dismissal.
  - Vehicular traffic is heavy during the same period of time.
  - No pedestrian crashes have occurred involving the midblock crosswalk.

- Aerial Map: El Paseo Road at Las Cruces High School

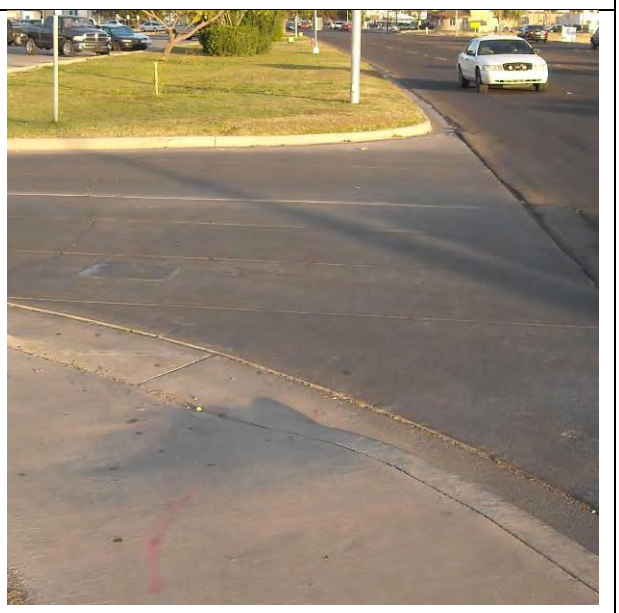
Las Cruces High School

Summary of Safety Issues and Suggestions for Existing Facilities

Safety Issue	Suggested Improvement / Timeframe	Photos
Communication Plan - Recommend close communication between the City and School Board to resolve any transportation safety issues related to the redevelopment of LCHS.	***Short Term*** - Develop and follow a communication plan to serve as a pilot for other joint initiatives.	Photo shows LCHS renovation plans and how they may affect El Paseo Road.
Pedestrian Safety and Temporary Traffic Control – Overarching safety objectives are to: • Minimize crossing distances, vehicle speeds, and volumes were large pedestrian movements occur. • Cross students safely across the street. • Manage vehicular traffic leaving the school, particularly the left turns. • Match traffic conditions with appropriate temporary traffic control. For example, there are 20 minutes of congestion due to LCHS dismissal in the afternoon.	***Short Term –*** • Consider a staggered student release whereby pedestrians leave first and vehicles leaving the school campus are delayed for five minutes until the pedestrians have safely crossed the street. • If adequate gaps are not creating at least one safe crossing per minute at the midblock crossing, then a school crossing guard with stop paddles or a HAWK signal may be required to provide adequate gaps.	Photo shows 15MPH school zone on El Paseo Road facing north.

School zone at Las Cruces High School is short.	***Mid-Term*** **-** Extend school zone northward to the northern driveway to the student drop-off and pick-up, particularly when LCHS expands across El Paseo Road.	 Photo shows an example of a school crossing guard and a typical HAWK Signal operation.
Peak Pedestrian Demand - Multi-threat pedestrian / vehicle crashes at intersections; students overwhelm Boutz Road and El Paseo Road intersection during lunch time; peak student pedestrian demand overwhelms the design capacity of Boutz Road.	See Improvements for Boutz Road.	Photo shows pedestrian refuge island at capacity during LCHS dismissal.
Midblock crosswalk near Lee Whisman across El Paseo Road is not accessible and needs to meet driver expectancy; Midblock school crosswalk is not placed in ideal location to facilitate traffic flow on El Paseo Road and peak student pick-up/drop-off; Left turns out of student drop off onto	***Short Term*** **-** Remind students and parents of proper pick-up and drop-off procedures as well as the expectations of students walking and driving to school. ***Mid-Term*** **-** The current crosswalk location across El Paseo Road is not in an ideal location from a land use perspective. The architecture of the school building and driver expectancy would dictate that the	Photo shows LCHS midblock crosswalk on El Paseo Road during school dismissal.

northbound El Paseo Road complicate traffic flow and send traffic back towards a congested intersection at Boutz Road & El Paseo Road; Drivers are stopping on El Paseo Road during the morning drop-off from through lanes.	crosswalk should be moved north; closer to the main entrance. The parking spaces could be reconfigured to create a raised crosswalk through the parking lot to El Paseo Road. The current school crosswalk is also not placed in an ideal location to facilitate traffic flow on El Paseo Road and student pick-up. One recommendation is to construct a center median refuge island. Additionally, analyze placing left turn restrictions out of student drop-off onto northbound El Paseo Road by extending the median (which includes the proposed pedestrian refuge island) over in front of the existing exit to simplify operations. Much of this discussion should center on the proposed use and layout of the new parcel being acquired by the school system to the east of the El Paseo Road corridor.	 Photo shows traffic queue from LCHS midblock crosswalk during school dismissal and inefficient traffic operations with student pick-up operations. Photo shows LCHS main entrance where a proposed pedestrian corridor could be created to cross El Paseo Road and connect to new parcel to the east.
Multi-Threat Vehicle-Pedestrian Crash Potential - A multi-threat crash is one in which visibility of a pedestrian crossing is obstructed by a vehicle stopped at the crosswalk. Vehicles in adjacent lanes are not able to see pedestrians (and vice versa) because	***Short Term*** – Install yield lines in advance of the crosswalk to prevent a multi-threat crash. This would allow enough sight distance for drivers in both lanes to see the pedestrian crossing.	 Photo shows no yield line at LCHS midblock crossing on El Paseo Road.

of the position of the stopped vehicle yielding to pedestrians in the crosswalk.		
Lack of Connectivity – There are no sidewalks on either side of the road from the school drop-off entrance to exit.	***Mid- Term* –** Construct sidewalks on both sides of El Paseo Road at the crosswalk and make the crosswalk accessible.	 Photo shows sidewalk continuity issues along El Paseo Road in front of LCHS.
Transit vehicles block through lanes. While it may be infrequent today (once per hour), lane blocking may become more of an issue if transit headways are shortened in the corridor.	***Long-Term* -** Construct a permanent transit stop with a pullout bay. A possibility may be to co-locate facilities in the new school bus loop.	Photo shows RoadRUNNER Transit vehicle stopped in the SB El Paseo Road through lane in front of LCHS.

El Paseo Road at Boutz Road

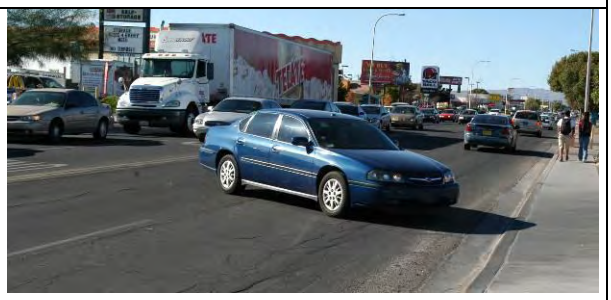
- Key Observations
  - Poor access management at the traffic signal, particularly with left turns.
  - Pavement Markings are worn (crosswalks, longitudinal lines, lane control arrows, double yellow, stop bars, etc.).
  - Nominal safety with traffic signal conspicuity and visibility.
  - Sun glare.
  - Right turn on red on eastbound and westbound Boutz Road not stopping; this is particularly a concern for pedestrians.
  - Westbound left turns conflicting with pick-up/drop-off area.
  - Number of "sneakers" on permissive left turn phase.
  - Signal timing needs to be reviewed to allow minimum left turns.
  - Permissive phase and the pedestrian conflicts with walk phase.
  - Retroreflectivity of street names signs and lighting crosswalks.
  - Right turn lane slip ramps are not pedestrian friendly design.
    - Accessibility issues within the islands. The ramps are at grade and the island is raised. This makes it more difficult for visually impaired pedestrian to navigate the island. Problems with debris in the walkway was also noted.
    - Push buttons on the wrong side.
    - Ramp alignment with crosswalks Southeast quadrant.
    - Ramp alignment across slip ramps Northwest quadrant.
    - Inadequate lighting and pedestrian storage in slip ramps.
    - Inadequate landing.
    - Skew diverts driver attention from pedestrian.
    - Not clear where drivers expected to stop.
  - Distracted walking.
- Pertinent Crash / Traffic Data Discussion
  - The intersection has an entering daily traffic volume of 33,456 AADT and averages 25 crashes per year and is the sixth highest for traffic crashes in the City.
  - Fatality due to sun glare/ Red Light Running (RLR); Angle Crash.
  - Non-Visible Injury (Type C) Red Light Running (RLR) Crash.
  - Serious Injury (Type A) Angle Crash NB Left with SB.
  - Multi-Threat Visible Injury (Type B); Rear-end Non-Visible Injury (Type C).
  - Pedestrian struck in the northwest quadrant's channelized right turn- Visible Injury (Type B).
  - Two motorcycles struck; one where rain as a contributing factor- Visible Injury (Type B).
  - Heavy left and right turning movements conflict with pedestrian movements.

- Aerial Map: El Paseo Road at Boutz Road

Note: Aerial Map does not include McDonald's construction in the Northwest quadrant.

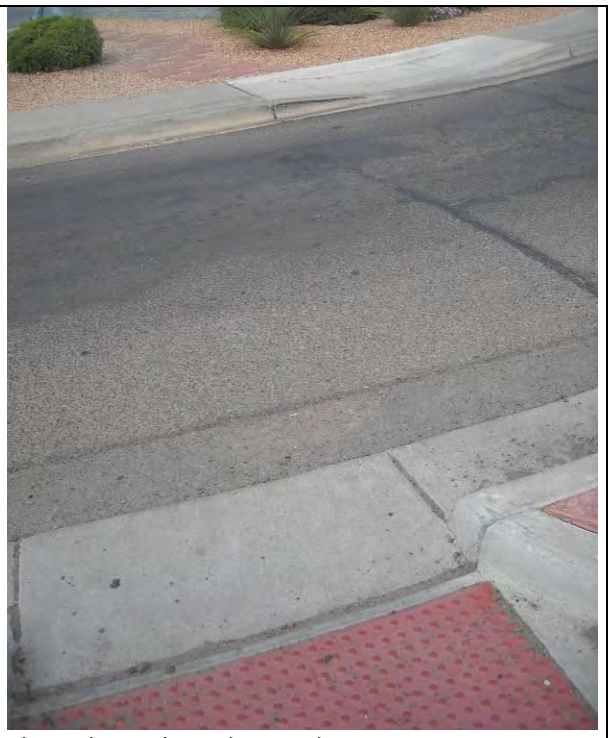
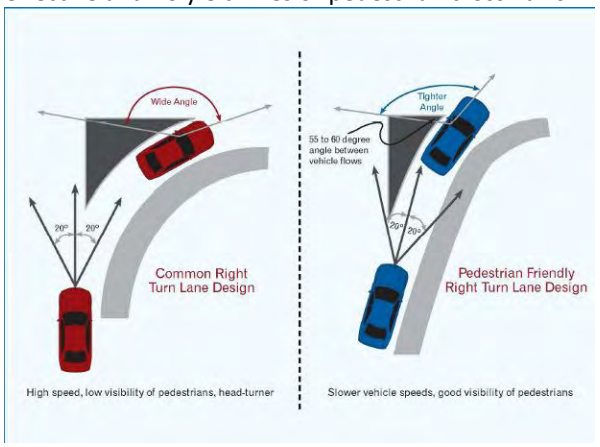
El Paseo Road at Boutz Road:

Summary of Safety Issues and Suggestions for Existing Facilities

Safety Issue	Suggested Improvement/ Timeframe	Photos
Access Management - Poor access management at the traffic signal, particularly with left turns.	***Mid-Term*** **–** Construct a raised Center Median to 95th Percentile Queue in all directions at all signalized intersections (particularly Boutz Road and Idaho Avenue, and Main Street).	 Photo shows southbound vehicle on El Paseo Road turning from the Boutz Road intersection left turn lane into a private driveway.
Pavement Markings are worn (crosswalks, longitudinal lines, lane control arrows, double yellow, stop bars, etc.).	***Short Term*** **-** Repaint Pavement Markings with a durable thermoplastic marking including crosswalks, lane control arrows, longitudinal lines, stop bars, yield lines, and double yellow.	Photo shows worn pavement markings with little retroreflectivity.
Signal Conspicuity and Visibility - Two traffic signals meet nominal safety required by the MUTCD; however, modern signal practice would have a traffic signal for each lane to meet substantive safety practice with traffic signal conspicuity and visibility.	***Mid-Term*** – Modernize existing traffic signal design to place a signal head on a mast arm over each travel lane.	Photo shows one traffic signal head on the mast arm. This configuration may be less conspicuous to motorists especially when large vehicles may obstruct visibility of the signal heads.

Right Turn – Pedestrian Movement Conflicts - Right turn on red on EB and westbound Boutz Road not stopping; this is particularly a concern for pedestrians.	***Short Term –*** Install walk push button activated LED No Right Turn on Red on closest crosswalk. This would only restrict right turns when activated by a pedestrian depressing the push button.	Photo shows an example of an LED "No Turn on Red" sign that would be push button activated.
Student Pick-Up Entrance – Westbound Boutz Road left turns to southbound El Paseo Road conflicting with queue from pick-up/drop-off area.	***Mid-Term*** • When LCHS renovations occur, conduct a traffic analysis to determine the proper distance to locate the new drop-off area entrance from the intersection. • Per LCHS preliminary plans, relocate drop off area to the west side of the school.	Photo shows WESTBOUND Boutz Road to SB El Paseo Road left turns conflicting with SB El Paseo Road queue to access student pick-up driveway.
Signal Timing needs to be reviewed to allow minimum green for left turn arrows by direction; number of "sneakers" on permissive left turn phase; permissive phase and the pedestrian conflicts with walk phase, particularly during heavy pedestrian movements.	***Short Term*** • Recalculate red clearance interval. Current red clearance interval is 1 second and it may be too short for intersection size. May need an extra second. • Consider protected left turn only phasing during peak pedestrian periods. • Consider detecting absence of left turn volume by approach and giving "left turn protected time" back to mainline throughs.	Photo shows vehicle turning left on the permissive phase (a "sneaker") conflicting with pedestrian walk phase.

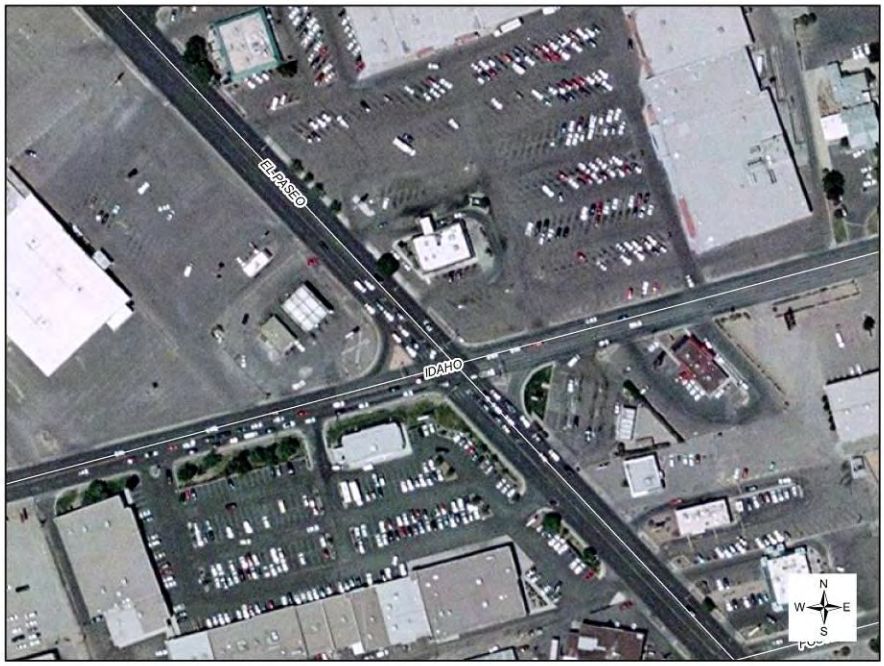
Street Name Signs – Check retroreflectivity of street names signs.	***Short Term -*** Replace street name signs where worn.	Photo shows street name sign example.
Channelized Right Turns are not pedestrian friendly design. • Accessibility issues within the islands and cut-throughs. The ramps are at grade and the island is raised. Difficult for visually impaired pedestrian to navigate the island. Problems with debris in the walkway. • Pedestrian push buttons on the wrong side. • Ramp alignment with crosswalks in Southeast quadrant is skewed. • Ramp alignment across channelized right turn in Northwest quadrant is skewed. • Inadequate lighting, pedestrian storage, and landings in channelized right turns. • Skew diverts driver attention from pedestrian in channelized right turns. • Not clear where drivers expected to stop for vehicles or pedestrians.	***Short Term -*** • Place pedestrian push buttons on correct side of pole. • Install dual yield signs, yield lines, and crosswalks in the channelized right turn. ***Mid-Term*** • Redesign Channelized Right Turns to be accessible and pedestrian friendly with adequate storage. • Address lighting issues at the intersection crosswalks particularly the islands. • Construct accessible pedestrian facilities (Remove obstacles, create better landing areas, align accessible ramps in Southeast & Northwest quadrants, push buttons located near ramps, island design is difficult for visually impaired).	Photo shows existing pedestrian refuge island and channelized right turn in Northwest quadrant. Photo shows inaccessible pedestrian push button on the incorrect side of the ramp.

		 Photo shows skewed ramp alignment across Northwest quadrant channelized right turn. Photo shows yield sign too far around curve to be effective and no yield lines or pedestrian crosswalks.  Photo shows an example of a more pedestrian and vehicle friendly channelized right turn. It is slower speed and positions driver's head such that they can see traffic better.

El Paseo Road at Idaho Avenue

- Key Observations
  - Two thirds of the crashes occurred between 12PM and 5PM.
  - There are a high percentage of pedestrians within the corridor that is elderly or disabled.
  - Poor access management at the traffic signal particularly with left turns.
  - Pavement markings are worn (crosswalks, longitudinal lines, lane control arrows, double yellow, stop bars, etc.).
  - Nominal safety with traffic signal conspicuity and visibility.
  - Need to resolve congestion and capacity issues.
  - Sun glare.
  - Cars are stopping in crosswalk.
  - Channelized right turns are not pedestrian friendly design:
    - Inadequate lighting and pedestrian storage in slip ramps.
    - Pedestrian push button in Southeast quadrant is not near crosswalks.
    - Need better pedestrian landing areas to meet ADA.
    - Maintenance needed in pedestrian refuge island.
    - Need dual yield signs, yield lines, and crosswalks in the channelized right turns; Not clear where drivers expected to stop.
  - Push buttons need to be repair on west side of intersection.
  - Sidewalk Obstructions (Cabinet).
- Pertinent Crash / Traffic Data Discussion
  - The intersection has an entering daily traffic volume of 29,055 AADT and averages 32 crashes per year and is the third highest for traffic crashes in the City.
  - Traffic Congestion due to split phase on Idaho Avenue. Option #3 from the Idaho Avenue Lane Diet Study is appropriate for implementation.
  - Multiple Rear-end crashes by inattention and speed differential due to turning movements.
  - Driver distraction and access management issues are prevalent here.
  - Competing gas stations for the lowest price add to turning movement.

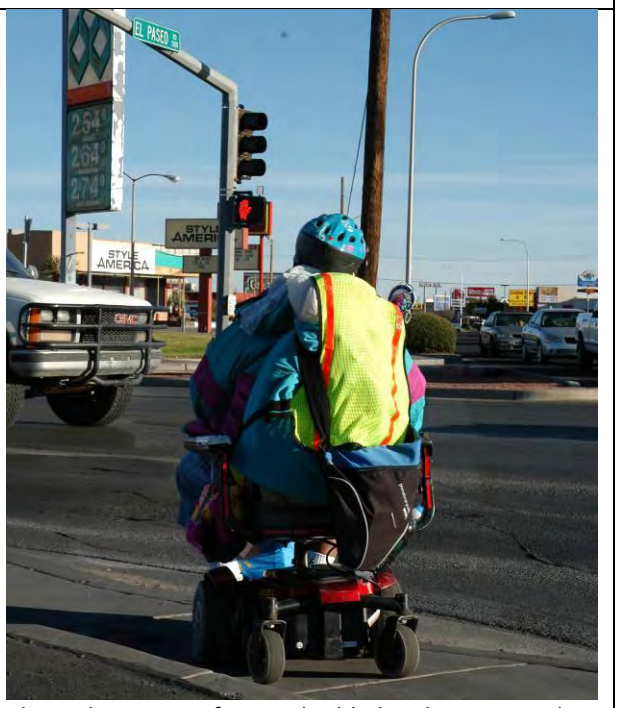
- Aerial Map: El Paseo Road at Idaho Avenue



Note: Aerial Map does not include Walgreen's construction in the Northwest quadrant.

El Paseo Road at Idaho Avenue:

Summary of Safety Issues and Suggestions for Existing Facilities

Safety Issue	Suggested Improvement / Timeframe	Photos
Disabled Pedestrians - There are a high percentage of pedestrians within the corridor that are elderly or disabled. Push buttons need to be repaired on west side of intersection.	***Short Term*** • Check pedestrian clearance intervals based upon new MUTCD standard of 3.5 ft/s. • Repair push buttons on west side of the intersection.	 Photo shows one of many disabled pedestrians in the El Paseo Road corridor
Right Turn – Pedestrian Movement Conflicts - Right turn on red on eastbound and westbound Idaho Avenue not stopping particularly for pedestrians.	***Short Term –*** Install walk push button activated LED No Right Turn on Red on closest crosswalk.	 Photo shows an example of an LED "No Turn on Red" sign that would be push button activated

Access Management - Poor access management at the traffic signal particularly with left turns.	***Mid-Term –*** Construct raised center median to 95th Percentile Queue in all directions at all signalized intersections.	 Photo shows left turn from private driveway onto SB El Paseo Road at Idaho Avenue
Pavement Markings are worn (crosswalks, longitudinal lines, lane control arrows, double yellow, stop bars, etc.). Cars are stopping in crosswalk.	***Short Term*** • Repaint Pavement Markings with a durable thermoplastic marking including crosswalks, lane control arrows, longitudinal lines, stop bars, yield lines, and double yellow. • Replace street name signs where worn.	 Photo shows poor pavement markings with little retroreflectivity
Signal Conspicuity and Visibility - Two traffic signals meet nominal safety required by the MUTCD; however, modern signal practice would have a traffic signal for each lane to meet substantive safety practice with traffic signal conspicuity and visibility. Sun glare.	***Mid-Term*** – Modernize existing traffic signal design to place a signal head on a mast arm over each travel lane.	 Photo shows one traffic signal head on the mast arm. This configuration may be less conspicuous to motorists especially when large vehicles may obstruct visibility of the signal heads.

Intersection Capacity - Need to resolve congestion and capacity issues with current split phase operation on Idaho Avenue.	***Mid-Term* -** Implement Option #3 Geometric Design to add concurrent phasing and remove split phase. The final design should incorporate the safety recommendations found here in this report.	
Sight Distance – The traffic control cabinet is located within the sight triangle for the intersection.	***Mid-Term* –** When Option #3 is implemented relocate signal control cabinet outside of sight triangle and provide more space to pedestrian storage area.	 Photo shows a traffic control cabinet blocking the sight distance

Channelized Right Turns are not pedestrian friendly design: • Inadequate lighting and pedestrian storage in refuge islands. • Pedestrian push button in Southeast quadrant is not near crosswalks. • Need better pedestrian landing areas to meet Americans with Disabilities Act (ADA). • Maintenance needed in pedestrian refuge island. • Need dual yield signs, yield lines, and crosswalks in the channelized right turns; not clear where drivers expected to stop.	***Mid-Term*** • Redesign Channelized Right Turns to be accessible and pedestrian friendly (See Boutz Road). • Install walk push button activated LED No Right Turn on Red for each crosswalk without a raised pedestrian refuge island (See Boutz Road). • Construct accessible pedestrian facilities (Remove obstacles (cabinet), better landing areas, align accessible ramps, push buttons located near ramps in Southeast quadrant, island design is difficult for visually impaired). • Address lighting issues at the intersection crosswalks particularly the islands. • Implement Option #3 Geometric Design to add concurrent phasing and remove split phase.	 Photo shows offset and obstacles from pedestrian push button and ramp to crosswalk in Southeast quadrant of Idaho Avenue

El Paseo Road at Wyatt Drive

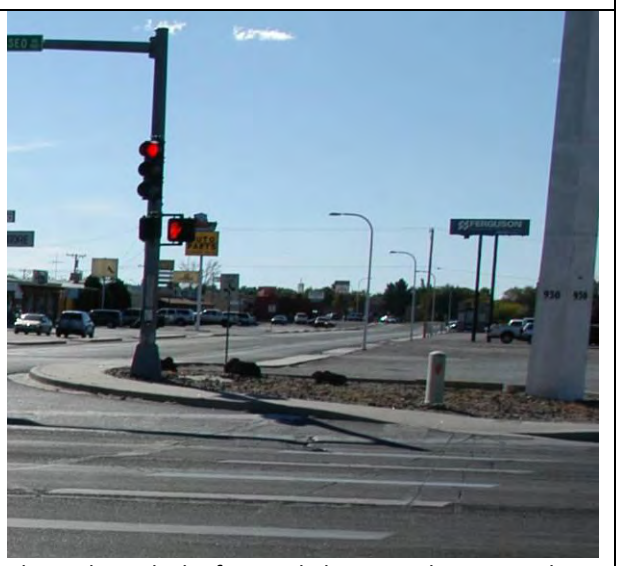
- Key Observations
  - There are a high percentage of pedestrians within the corridor that are elderly or disabled.
  - Pavement Markings are worn (crosswalks, longitudinal lines, lane control arrows, double yellow, stop bars, etc.).
  - Lighting issues at the intersection, particularly in the Northwest quadrant.
  - North crosswalk is skewed placing pedestrians' cone of vision to one direction of travel.
  - Pedestrian Landing areas inadequate.
  - West crosswalk length is long.

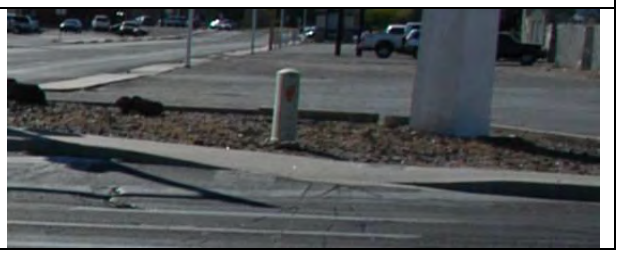
- Pertinent Crash / Traffic Data Discussion
  - The intersection has an entering daily traffic volume of 22,737 AADT and averages 10 crashes per year.
  - One Red Light Running (RLR) crash Type C; One Rear-end crash Type C.
  - Side street traffic volumes are light.

- Aerial Map: El Paseo Road at Wyatt Drive

El Paseo Road at Wyatt Drive:

Summary of Safety Issues and Suggestions for Existing Facilities

Safety Issue	Suggested Improvement / Timeframe	Photos
Disabled Pedestrians - There are a high percentage of pedestrians within the corridor that are elderly or disabled.	***Short Term* -** Check pedestrian clearance intervals based upon new MUTCD standard of 3.5 ft/s.	Photo shows one of many disabled pedestrians in the El Paseo Road corridor
Pavement Markings are worn (crosswalks, longitudinal lines, lane control arrows, double yellow, stop bars, etc.).	***Short Term*** - Repaint Pavement Markings with a durable thermoplastic marking including crosswalks, lane control arrows, longitudinal lines, stop bars, yield lines, and double yellow.	Photo shows worn pavement markings with little retroreflectivity
Street Lighting issues at the intersection, particularly in the Northwest quadrant.	***Long Term* -** Conduct a Lighting study to address dark spot issues in the Northwest quadrant.	 Photo shows lack of street light in Northwest quadrant at Wyatt Drive

Northwest Quadrant - North crosswalk is skewed placing pedestrians' cone of vision to one direction of travel; West crosswalk length is long.	***Long Term*** • Adjust crosswalk angle more towards 85-90 degrees. Northern crosswalk is skewed such that pedestrian peripheral vision is not used. • Check turning radius in Northwest quadrant to see if it can be tightened to minimize pedestrian exposure.	 Photo shows skewed northern crosswalk and large curb radius in Northwest quadrant
Pedestrian Landing Areas are inadequate due to lack of right-of-way.	***Long Term -*** Construct accessible pedestrian facilities (Remove obstacles, better landing areas).	

El Paseo Road at Alameda Boulevard and Main Street

- Key Observations
  - There are a high percentage of pedestrians within the corridor that are elderly or disabled.
  - This intersection is very wide.
  - Nominal safety with traffic signal conspicuity and visibility.
  - Permissive left turn phasing on El Paseo Road is not consistent with remaining corridor and may not meet driver expectation.
  - Pavement Markings are worn (crosswalks, longitudinal lines, lane control arrows, double yellow, stop bars, etc.).
  - Better channelization on Main Street; unknown shoulder space present.
  - Right turn lane slip ramps are not pedestrian friendly design:
    - Northbound-Eastbound Slip Ramp traffic control is confusing with traffic signal and yield condition.
    - Southeast quadrant Maintenance of Slip Ramp Island.
    - No sidewalk in Northwest corner or landings.
    - Pedestrian signal head in Northwest quadrant is not in cone of vision of pedestrian.
    - Accessibility issues within the islands. Northwest island is not accessible. Push buttons are not accessible in Northwest and Northeast.
  - Sidewalk deterioration and uneven sidewalk - severe Southwest quadrant.
  - Northeast quadrant has drainage issues.
  - SW corner tree needs to be trimmed up for sight distance.
- Pertinent Crash / Traffic Data Discussion
  - The intersection has an entering daily traffic volume of 29,206 AADT and averages 12 crashes per year.
  - Rear-end crashes multiple directions.
  - Accessibility issues abound at this intersection for pedestrians.

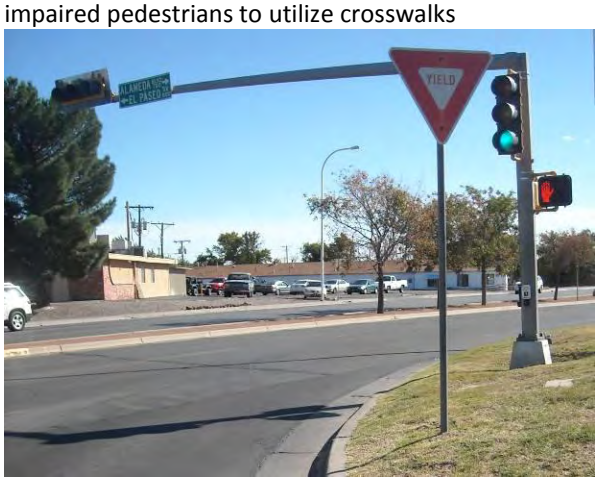
- Aerial Map: El Paseo Road at Main Street and Alameda Boulevard

El Paseo Road at Main Street and Alameda Boulevard:

Summary of Safety Issues and Suggestions for Existing Facilities

Safety Issue	Suggested Improvement / Timeframe	Photos
Disabled Pedestrians- There is a high percentage of pedestrians within the corridor that are elderly or disabled. This intersection is very wide.	***Short Term*** **-** Check pedestrian clearance intervals based upon new MUTCD standard of 3.5 ft/s.	Photo shows one of many disabled pedestrians in the El Paseo Road corridor
Access Management - Poor access management at the traffic signal particularly with left turns.	***Mid-Term*** **-** Construct raised center median to 95th Percentile Queue in all directions at all signalized intersections.	Photo shows driveway entrances in close proximity to the signalized intersections area of influence
Signal Conspicuity and Visibility - Two traffic signals meet nominal safety required by the MUTCD; however, modern signal practice would have a traffic signal for each lane to meet substantive safety practice with traffic signal conspicuity and visibility.	***Mid-Term*** – Modernize existing traffic signal design to place a signal head on a mast arm over each travel lane.	Photo shows one traffic signal head on the mast arm. This configuration may be less conspicuous to motorists especially when large vehicles may obstruct visibility of the signal heads.

Permissive Left Turn Phasing on El Paseo Road is not consistent with remaining corridor and may not meet driver expectation.	***Mid-Term*** • Study phasing operations to determine if a protected-permissive phase on El Paseo Road would create capacity issues.	 Photo shows permissive only phasing on NB El Paseo Road at Main Street. All other major intersections in the corridor have protected-permissive phasing
Pavement Markings are worn (crosswalks, longitudinal lines, lane control arrows, double yellow, stop bars, etc.). Better channelization on Main Street; unknown shoulder space present.	***Short Term*** • Repaint Pavement Markings with a durable thermoplastic marking including crosswalks, lane control arrows, longitudinal lines, stop bars, yield lines, double yellow. • Replace street name signs where worn. • Better delineate shoulders and their intended use on Main Street.	 Photo shows worn pavement markings with little retroreflectivity
Channelized Right Turns are not pedestrian friendly design: • Northbound to Eastbound Slip Ramp traffic control is confusing with traffic signal and yield condition. • Southeast quadrant Maintenance of Slip Ramp Island. • No sidewalk in Northwest corner or landings. • Pedestrian signal head in Northwest quadrant is not in cone of vision of pedestrian. • Accessibility issues	***Short Term*** • Adjust traffic control in the Northbound to Eastbound Channelized Right Turn - traffic control is confusing with pedestal traffic signal and yield condition • Maintain Southeast quadrant island free of debris ***Mid-Term*** • Redesign Channelized Right Turns to be accessible and pedestrian friendly particularly the Northwest quadrant (See Boutz Road).	 Photo shows lack of accessibility to Northwest quadrant pedestrian refuge island Photo shows pedestrian signals outside of the cone of vision for pedestrians

within the islands. Northwest island is not accessible. Push buttons are not accessible in Northwest and Northeast.	• Construct accessible pedestrian facilities (Remove obstacles, better landing areas, push buttons located near ramps Northwest and Northeast). • Install Northwest quadrant sidewalk and landing as well as relocate pedestrian signal and push buttons to within the cone of vision and reach of the pedestrian.	 Photo shows debris and difficulty for visually impaired pedestrians to utilize crosswalks  Photo shows lack of access to pedestrian push buttons in the Northwest quadrant Photo shows lack of access to pedestrian push button in the Northeast quadrant

Tripping Hazard - Sidewalk deterioration and uneven sidewalk - severe Southwest quadrant.	***Short Term* -** Repair sidewalk deterioration and uneven sidewalk in Southwest quadrant.	Photo shows sidewalk in disrepair in the Southwest quadrant
Drainage Issue - Northeast quadrant has drainage issues.	***Short Term* -** Fix drainage issue.	Photo shows drainage issues in the Northeast quadrant
Sight Distance - SW corner tree limbs block sight distance.	***Short Term* -** Sight Distance improvement in Southwest quadrant (Tree limbs).	Photo shows tree limbs blocking sigh distance in Southwest quadrant

El Paseo Road: Corridor-wide (Particularly Boutz Road to Main Street)

- Key Observations
    - Pavement conditions are deteriorating.
    - Transportation users do not have clear expectations causing conflicts and near crashes.
    - There are several places where vegetation and other objects have obscured sight distance.
    - Sidewalk slopes into street and uneven sidewalk and Americans with Disabilities Act (ADA) issues.
    - Poor access management:
        - Number of entrances with right turns into and left turns out of parking lots.
        - Multi-threat pedestrian / vehicle crashes.
        - Rear-end crashes with turning traffic into parking lot driveways / Speed differential.
        - Driveway slope causes vehicles to bottom out, particularly at Sutherland's.
        - Need proper Right-of-way (ROW) width throughout corridor particularly for sidewalks and handicapped bus lift pads. Often times, the parking lot spaces are next to the corridor and the pedestrian movements have a significant challenge to address the Americans with Disabilities Act provisions. In addition, there are many disabled or elderly pedestrians traveling along El Paseo Road.
        - Drivers are having difficulty judging the appropriate travel speed. Currently law enforcement does not ticket vehicles traveling 44MPH or below. A wide range of speeds cause driver expectancy issues with significant turning movements into private access and high volumes of pedestrian and bicycle traffic in the corridor.
    - Midblock pedestrian crossings at Walgreens Albertsons - shortest distances.
    - Bicycles on sidewalk.
    - Cars blocking crosswalks.
    - Better lighting in intersections and dark spots removed.
    - Consistent use of RPMs.
    - Street tree planters are too small to allow proper growth of trees.

- Pertinent Crash / Traffic Data Discussion
    - Please see Key Safety Challenges /Observations from the Information Sources from page 3.

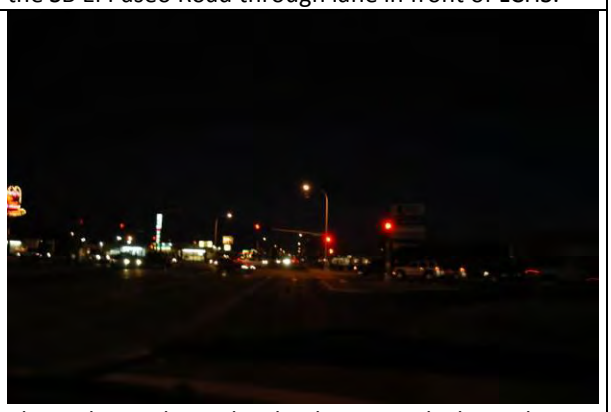
- Aerial Map: El Paseo Road from University Avenue to Main Street

Corridor-wide (Particularly between Boutz Road and Main Street)

Summary of Safety Issues and Suggestions for Existing Facilities

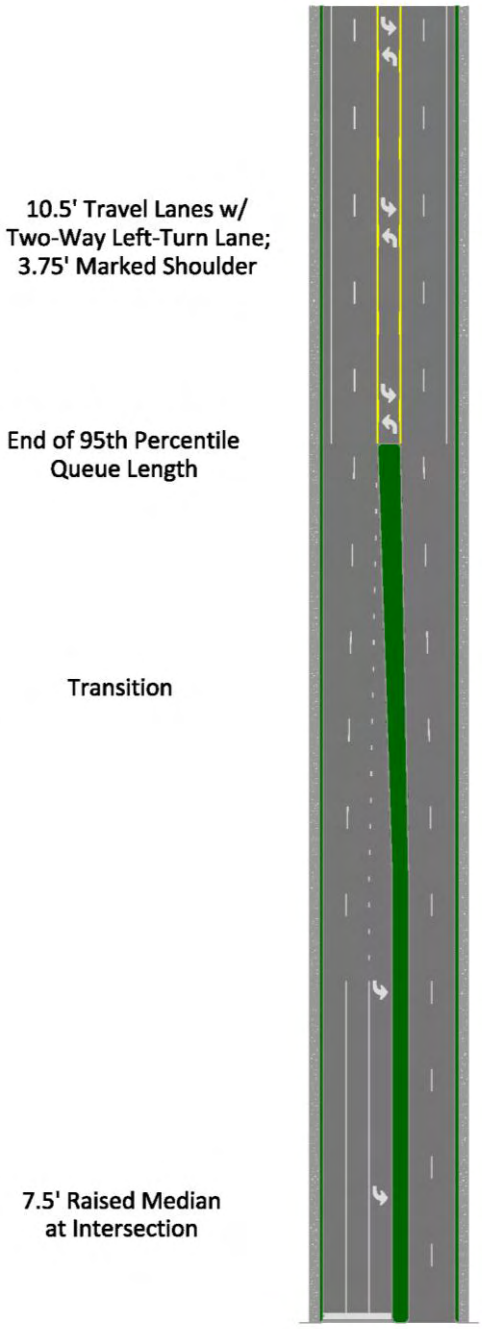
Safety Issue	Suggested Improvement / Timeframe	Photos
Unlicensed Drivers and Hit & Run Crashes - 1 out of 4 severe crashes involved an unlicensed driver; Half of the 110 midblock crashes were classified as hit & run. This is an extraordinarily high number of hit and run crashes.	***Short Term –*** Periodic enforcement of the corridor to include license, vehicle insurance, and registration check points to remove drivers who are unlicensed or have suspended or revoked driver's licenses from the corridor.	Photo shows Law Enforcement Checkpoint near Las Cruces, NM
Pavement Conditions are deteriorating.	***Mid-Term -*** Resurface with pavement overlay with Boutz Road to Main Street being the priority.	Photo shows poor pavement conditions along El Paseo Road
Pavement Markings - Transportation users do not have clear expectations causing conflicts and near crashes; Cars blocking crosswalks; Inconsistent use of Raised Pavement Markers (RPMs).	***Short Term*** • Repaint Pavement Markings with a durable thermoplastic marking including crosswalks, lane control arrows, longitudinal lines, stop bars, yield lines, and double yellow. • Use RPMs on the longitudinal lines approaching intersections and crosswalks. • Replace street name signs where worn.	Photo shows worn pavement markings with little retroreflectivity

	Mid-Term – Create a retro-reflectivity transition plan by 2012.	
Sight Distance – There are several places where vegetation and other objects have obscured sight distance.	***Short-Term –*** Continue to identify sight distance issues and remove obstructions.	Photo shows a traffic control cabinet blocking the sight distance
ADA Issues - Sidewalk slopes into street and uneven sidewalk and Americans with Disabilities Act (ADA) issues; Midblock pedestrian crossings at Walgreens Albertsons - shortest distances.	***Long Term -*** Replace sidewalks with consistent grade that meets ADA standards.	Photo shows slope on sidewalks that would draw wheel chairs into the street

		Photo shows tripping hazard due to uneven sidewalk joint
Transit vehicles block through lanes. While it may be infrequent today (once per hour), lane blocking may become more of an issue if transit headways are shortened in the corridor.	***Long-Term* -** Construct permanent transit stops with pullout bays where necessary.	Photo shows RoadRUNNER Transit vehicle stopped in the SB El Paseo Road through lane in front of LCHS.
Street Lighting - Better lighting in intersections and dark spots removed.	***Long-Term*** - Conduct a lighting study and provide additional lighting for crosswalk areas, particularly where wide intersections and channelized right turns within skewed intersections leave dark spots.	 Photo shows channelized right turns which need additional lighting to prevent dark spots

Transition Access Management Example at El Paseo Road & Idaho Avenue

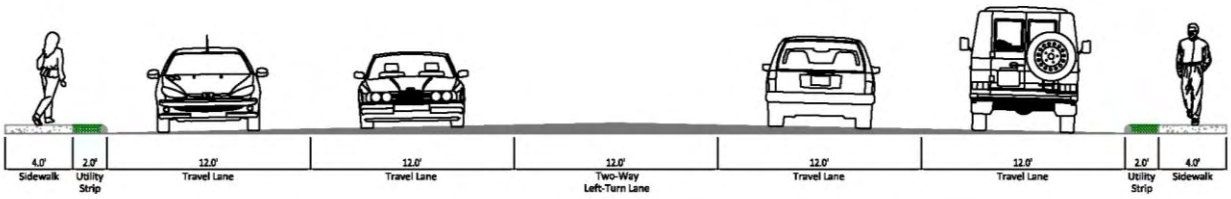
Since the intersection of El Paseo Road and Idaho Avenue will be reconstructed first, here is a transition for the visioning process. Figure X shows a proposed cross-section where a center median is installed to assist with access management at the intersection by narrowing lane widths. In the midblock segment, a small shoulder is created to help control speeds through narrower lanes and allows exiting vehicles the ability to leave the travel lanes quicker. It also minimizes pedestrian crossing exposure distances by 10%.



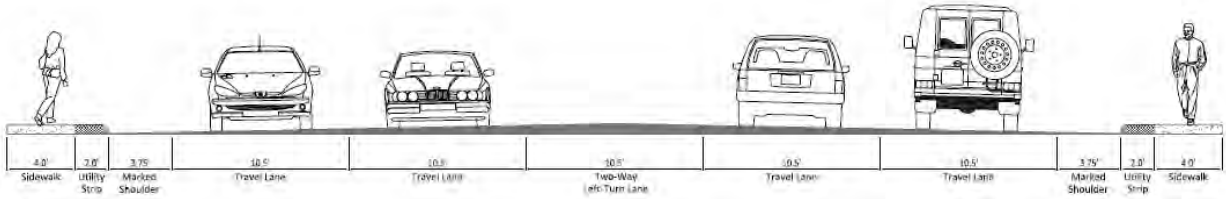
To further explain this access management example at El Paseo Road and Idaho Avenue, three cross sections have been developed to show the difference between existing conditions and the suggested improvement:

- Existing Cross-section
- Suggested Midblock Cross-section
- Suggested Intersection Cross-section

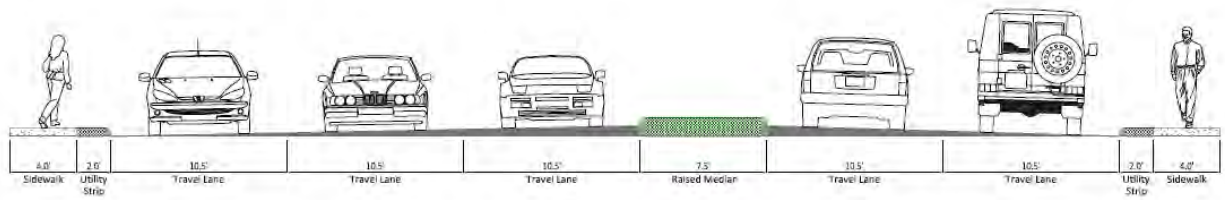
Existing Cross-section



Suggested Cross-section at the Mid-block



Suggested Cross-section at the Signalized Intersection



For more information about the redevelopment of El Paseo Road, Please contact:

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Las Cruces Metropolitan Planning Organization
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Phone - (575) 528-3047
Fax (575) 528-3155
Email AHume@las-cruces.org

Appendix

- El Paseo Road Traffic Information – On file

Green Infrastructure in the Southwest: Challenges and Opportunities

Conference Summary Report

August 26, 2010

Las Cruces, New Mexico

City of Las Cruces

Green Infrastructure in the Southwest: Challenges & Opportunities

Once again we are at a crossroads in human history. Our resources are limited. We need to conserve and find new technologies to provide the resources we need for a sustainable and quality standard of living.

In the Southwest, water is limited. But it's not so much that we have a water supply problem; it's more of a water management problem. It's with water that two other resources need to co-exist, plants and animals. We can enjoy an environment with plants and animals by managing our water better.

We hoped that the conference would provide the opportunity for regional experts to share their experience with Green Infrastructure and Low Impact Development and the special challenges and opportunities these pose in our desert environment. GI and LID offer sound alternatives to conventional storm water management and also provide additional benefits to people and wildlife. By building infrastructure that is water and resource-conserving we can maintain and improve our quality of life. Las Cruces can be a leader in this effort.

Gill Sorg, Councilor
District 5
City of Las Cruces

City of Las Cruces®
PEOPLE HELPING PEOPLE

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Executive Summary

In April 2010, the City of Las Cruces formed a green infrastructure working group to address a focus area of the Picturing El Paseo Project. Their goal was to raise awareness about the application of green infrastructure principles to infrastructure and development projects. The GI working group was influenced by several City of Las Cruces staff members who attended the Albuquerque Arid GI/LID Workshop. They saw the benefits of hosting a similar event in Las Cruces. The GI working group became the GI Conference Organizing Committee. Their efforts resulted in **Green Infrastructure in the Southwest: Challenges & Opportunities** on August 26, 2010.

The GI conference was held at the Ramada Palms Conference Center in Las Cruces, New Mexico. It was attended by approximately 200 people, including engineers, developers, community activists, scientists, and many others with an interest in a sustainable future for the region. Planning, development and design staff attended from the City of Las Cruces, Doña Ana County, New Mexico State University, El Paso Water Utilities, the City of El Paso, and the University of Texas at El Paso.

Tom Schuster, Sustainability Officer for the City of Las Cruces, opened the conference by welcoming the participants. Dara Parker, Field Representative of Senator Jeff Bingaman, made a statement on behalf of the Senator. She stressed the importance of GI to the future of New Mexico and affirmed Senator Bingaman's support for the region's sustainability efforts.

The opening session speaker was Suzanna Perea, Green Infrastructure Coordinator for EPA Region 6. Suzanna helped plan the conference and provided EPA funding in support of the conference. She set the foundation for the day's technical sessions by discussing the effects of storm water on water quality and EPA's storm water regulatory program. She explained the role EPA hopes GI will play in improving water quality and the steps EPA is taking to revise the storm water permitting program.

The conference offered three parallel technical sessions through the day. A total of 24 presenters covered a wide range of topics related to GI/LID. The sessions included formal presentations and interactive exercises. Exhibits were available for participants who wanted more details on a GI method or construction materials. The networking and sharing of ideas throughout the day was the most valuable part of the conference for many participants.

The conference luncheon started with Representative Harry Teague of the NM 2nd Congressional District giving a few remarks in support of the conference's goals. The luncheon keynote speaker was Neil Weinstein, Executive Director and one of the founders of the non-profit Low Impact Development Center. He provided a national perspective on GI and lessons learned from implementation of GI in other communities. It was an opportunity for the participants to see the ways GI functions in a community and to learn about resources available for implementing GI.

After the conference, the GI working group met again to discuss ways to build upon the positive results of the conference. This GI Conference Summary Report is one of those ways. The report contains summaries of the conference's presentations and the questions and discussion that accompanied the presentations. It also contains the complete presentations in electronic format. The GI working group hopes the report will be a resource and a tool for furthering the implementation of GI in the region.

The City of Las Cruces has started reviewing its ordinances, standards, and criteria to identify changes needed to encourage sustainable development using GI and LID methods. Feedback from conference participants indicates that developing design, operation, and maintenance criteria specific to the arid Southwest may be the foremost need. Future efforts of the GI working group will be in this direction. For more information on the Sustainability Program, please visit www.las-cruces.org and click on Environment and Sustainability Program.

Overview of Green Infrastructure Legislation in the US Senate

Xochitl Torres, Field Representative for NM Senator Tom Udall

Biographical Information

Tom Udall became New Mexico's 17th United States Senator on January 6, 2009, after two decades of public service as U.S. Representative and New Mexico's State Attorney General. In the Senate, Tom serves on four committees, including the Committee on Commerce, Science and Transportation, the Committee on Environment and Public Works (EPW), the Committee on Indian Affairs, and the Committee on Rules and Administration. As a member of the Environment and Public Works Committee, Tom introduced several pieces of legislation, including the Green Infrastructure for Clean Water Act, which he plans to reintroduce this session. By promoting greener design of stormwater infrastructure, we can create jobs, save on construction costs, and help recharge our aquifers, all while reducing pollution and flooding of our scenic rivers.

Prior to joining the Senate, Tom represented the 3rd Congressional District of New Mexico for more than a decade in the U.S. House of Representatives. During that time, Tom wrote and passed legislation to establish a national renewable electricity standard, which would spur the creation of good jobs and reinvigorate our economy.

Tom began his career in public service in 1990, when New Mexicans chose him as their Attorney General. He made fighting DWI and domestic violence a priority and working with the Legislature, enacted tougher laws against offenders. Additionally, Tom made ethics a trademark issue, increasing transparency in government and prosecuting corrupt politicians, even members of his own party.

Tom is married to Jill Cooper and they have one grown daughter. In Tom's spare time he enjoys tennis, fly-fishing, mountain climbing, and staying involved in his community.

This presentation is available for download by clicking here.

Presentation Summary and Discussion

Xochitl Torres presented on behalf of Senator Udall. Traditional stormwater management has resulted in on-going problems of pollution, flooding, and erosion. At the same time, we're wasting a precious resource - water that can be harvested for use and groundwater recharge. GI is part of the solution to these problems.

New Mexicans are changing the way we think about stormwater. The New Mexico State Engineer is encouraging water harvesting. Santa Fe County mandates water harvesting, and Bernalillo County offers incentives for water harvesting.

EPA has a list of GI funding sources at: http://cfpub.epa.gov/npdes/greeninfrastructure/fundingopportunities.cfm

Funding is also available through the CARE Grant program, the CWA Nonpoint Source grants administered by NMED, and the US Green Building Council's research program. Unfortunately, available funding is limited compared to the problem. Also, most of the GI research is done in temperate climates, not in the arid southwest.

To address these issues, Senator Udall is working on the Green Infrastructure for Clean Water Act. It establishes five regional centers of excellence for GI, one of which could be in the arid southwest. These centers would spearhead research and development of GI techniques. The legislation also establishes a GI program within the EPA's Office of Water, which would link research to potential consumers by educating the public on recent findings. It further authorizes technical assistance and project grants for alternative techniques to stormwater management. The legislation does not alter the Clean Water Act's regulatory requirements; rather, it seeks to expand the options for communities to achieve clean water standards.

The legislation has been referred to the Environment and Public Works Committee. Companion legislation was introduced in the House of Representatives. It is scheduled for committee mark-up in September. The legislation could then be included in water/public lands legislation.

EPA's Green Infrastructure Initiative and Stormwater Rulemaking

Suzanna M. Perea
U.S. Environmental Protection Agency
Region 6

Biographical Information

Suzanna Perea earned a BS in Chemistry and an MS in Environmental Management from Hardin-Simmons University in Abilene, TX. For the past twelve years, Suzanna has worked as an environmental scientist in a variety of Clean Water Act programs at the state and federal level. Currently, Suzanna coordinates EPA's Region 6 Green Infrastructure Program efforts in promoting the benefits of implementing green infrastructure practices to improve water quality and quantity, and support climate change mitigation and energy saving efforts.

Abstract

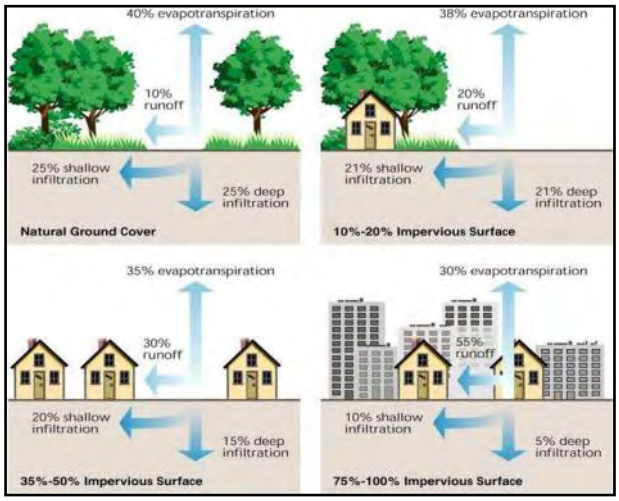
Information in this presentation provides the EPA background and context for the conference. The presentation discusses EPA's green infrastructure program and objectives, and EPA's policy efforts in the National Pollutant Discharge Elimination System (NPDES) program to facilitate green technologies, through both permitting and enforcement orders. The intent is to make it easier for green technologies to be integral parts of Long Term Control Plans (LTCPs) for combined sewer overflows, sanitary sewer overflows, and stormwater management programs.

This presentation is available for download by clicking here.

Presentation Summary and Discussion

Understanding the stormwater impacts of urban development, the stormwater regulatory framework and the municipal stormwater program is essential to understanding EPA's future direction for stormwater. Urban development changes land use. Residential, industrial and commercial land uses create new pollutant sources in a watershed. Development construction increases erosion and contributes sediment as a pollutant in runoff.

Urban development increases impervious area in a watershed, which has an impact on the hydrology of the watershed. An increase in imperviousness decreases evapotranspiration and infiltration while increasing runoff.

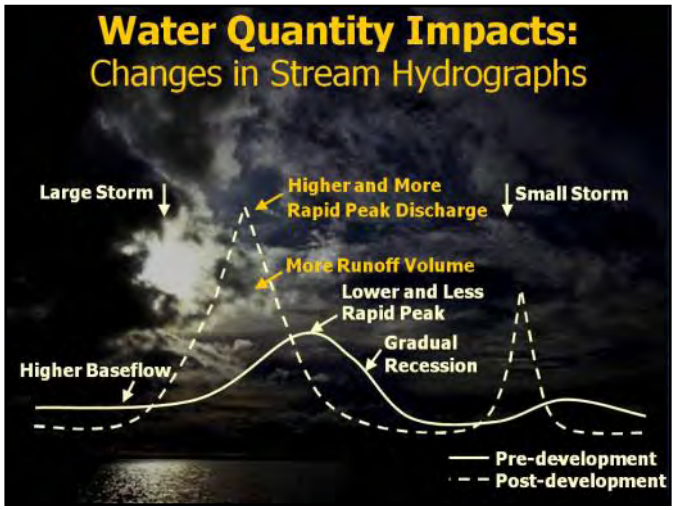


Source: FISRWG 2001

Stream hydrographs are changed by the increase in runoff from urban development. The hydrograph change results in stream widening and down-cutting, decreased baseflow and increased flooding. These physical changes degrade water quality, decrease habitat and increase stream temperature and sediment load.

Amendments to Section 402 of the Clean Water Act were passed in 1987. They established National Pollutant Discharge Elimination System (NPDES) permits for stormwater discharges from industrial activities, including construction, and Municipal Separate Storm Sewer Systems (MS4s). In addition, Section 402(p)(6) required regulations for stormwater discharges to be based on the results of studies.

Phase I of the stormwater permits were issued in 1990, and Phase II was issued in 1999. However, water quality problems related to urban development continued to pose challenges. In 2006 EPA commissioned the National Research Council (NRC) to study the stormwater permitting program and recommend improvements. NRC published its report in October 2008.



The NRC Study determined that the current approach to stormwater is unlikely to adequately control its contribution to water body impairment. Some of the significant recommendations from the NRC Study are:

- Flow and related parameters like impervious cover should be considered for use as proxies for stormwater pollutant loading.
- The full distribution and sequence of flows should be taken into consideration when assessing the impacts of stormwater on streams.
- Stormwater control measures that harvest, infiltrate, and evapotranspire stormwater are critical to reducing the volume and pollutant loading of small storms.

Coincident with the NRC study, EPA formed a Green Infrastructure Partnership and developed an Action Strategy for managing wet weather with green infrastructure.

The objectives of green infrastructure are:

- Reduce, retain, and treat runoff on-site.
- Promote infiltration and evapotranspiration, as well as storage.
- Mimic pre-development hydrology.
- Tri-focal approach.

EPA has initiated rulemaking to strengthen the storm water regulations. Six listening sessions were held to solicit public input. EPA also issued an Information Collection Request to assist in the rulemaking. The proposed rule is scheduled to be published in late 2011, with a final action scheduled for November 2012.

A conference attendee commented to Suzanna Perea that the listening sessions did not include a dry climate location. Out-of-state architects don't understand the Las Cruces environment, as was experienced with Vision 2040. Suzanna said the need for information from the southwest has been identified by EPA's Office of Science Policy. Information from projects in Austin, TX was added to its green infrastructure research.

Another person commented that LID theory is not new. It's been around for 20 years. A discussion of rain water harvesting ensued, during which Suzanna stated that the size of rainwater catchment, placed strategically to infiltrate as much water as possible, should convey the first inch of rain into the soil for vegetation to treat.

A participant asked Suzanna who defines the watershed if watershed permits are pursued? And also, who leads when multiple communities are involved? Her reply was that EPA wants input from all stakeholders. Details like cost-sharing would need to be discussed.

Suzanna was asked if the potential regulations for new development will be performance-based or prescriptive. She responded that there is nationwide discussion within EPA on this issue. The final determination will be made in Washington, D.C., but EPA is leaning heavily toward performance measures, such as post construction controls required to manage a certain volume of runoff.

Session 1A

Planning for, Designing, and Constructing Sustainable Transportation Infrastructure

Dan Andersen
CH2M HILL

Biographical Information

Dan Andersen is a transportation planner with CH2M HILL, assigned to Nevada, Arizona, and New Mexico, with 25 years of professional experience - 7 years in transportation planning and 18 years in public relations. He helps clients and their constituents resolve complex problems and identify sustainable transportation solutions—solutions that improve the economic and social quality of human life while limiting our impacts on the environment to the carrying capacity of nature. He earned a Bachelor of Arts in International Relations from Brigham Young University and a Master of Science in Environmental Management and Policy from the University of Nevada Las Vegas.

Abstract

This presentation identifies a two-step framework for developing sustainable transportation solutions and infrastructure. Step-1 considers a broader range of solutions to meet mobility needs beyond building or expanding roads—such as demand management, system efficiency, and multimodal solutions. When infrastructure solutions are selected to meet mobility needs, Step-2 is to develop the projects in more sustainable ways by aligning to five broad objectives, described in the Greenroads Sustainability Performance Metric: Reduce Energy Consumption; Reduce Consumption of Material Resources; Reduce Impacts to Environmental Resources; Support Healthy Urban Communities; and Support Sustainability during Implementation.

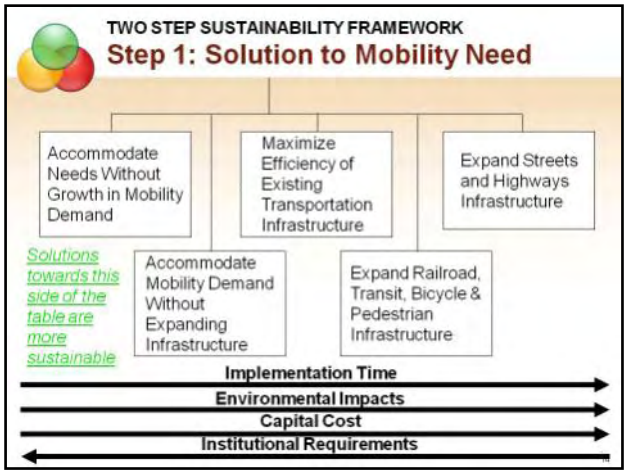
This presentation is available for download by clicking here.

Presentation Summary and Discussion

Sustainable transportation should be cost efficient and affordable, provide equitable access and mobility choices, and be compatible with the natural environment. Context Sensitive Solutions is the base upon which sustainability in transportation can be addressed. A two step processed is used.

Step 1: Identify the most sustainable solutions for addressing mobility needs.
Step 2: When additional infrastructure is determined necessary to meet mobility needs, design and construct it in a sustainable manner.

In Step 1, options that meet transportation needs without expanding infrastructure are considered the most sustainable. These options include live-work balance, ride sharing, travel demand management, and other means of increasing and maximizing the efficiency of existing infrastructure. Infrastructure is added or expanded only when other options are not feasible, and then it is done as sustainably as possible.



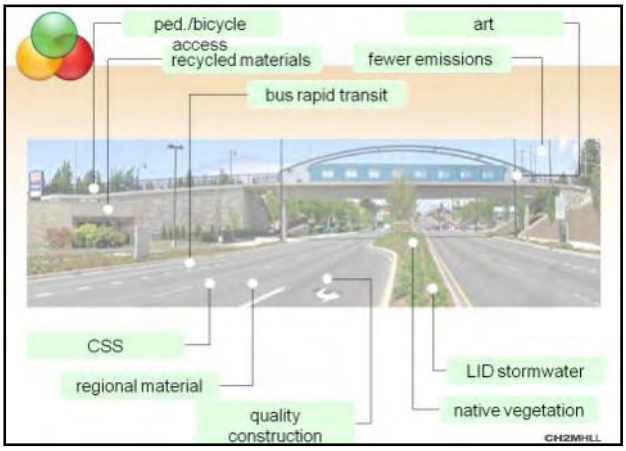
Presentation participants brainstormed ways that mobility needs can be addressed and infrastructure added in a sustainable manner, including:

- Providing space within the ROW for a bike path.
- Staying within existing ROW, so there is no net expansion of the footprint.
- Using regional materials.

- Re-using asphalt or using recycled materials.
- Using solar lighting.

Participants then discussed sustainable practices for constructing new roadways:

- Designing to maintain natural drainage ways.
- Including wildlife corridors.
- Incorporating HOV lanes into the highway.
- Providing charging stations for electric vehicles.



When additional infrastructure is deemed necessary to meet mobility needs, Step 2 encourages practices for designing and constructing it in a sustainable manner. One challenge is quantifying green elements. The LEED rating system does include metrics for sustainable transportation infrastructure. The University of Washington and CH2M HILL have developed a Greenroads metric that rates projects on sustainability and sustainable practices. The metric consists of five categories: Environment & Water; Access & Equity; Construction Activity; Materials & Resources; and Pavement Technology.

Guidance for determining points in each category is available at www.greenroads.us. Dan's presentation gives examples of methods and materials to earn points in each category. One of the methods for Environment & Water is porous concrete. A participant commented that they'd love to use porous concrete, but it's not accepted. Someone else suggested specifying porous concrete as an alternative material or projects. It was then stated that EPA guidance indicates porous pavement performance depends on the technology used for the concrete and the sub-soil.

Greenroads Categories (Version 1.0)

Category	Description	Points
Project Requirements	Minimum requirements for Greenroads	----
Environment & Water	Stormwater, habitat, vegetation	21
Access & Equity	Modal access, culture, aesthetics, safety	30
Construction Activities	Construction equipment, quality, use	14
Materials & Resources	Material extraction, processing, transport	23
Pavement Technology	Pavement design, material use, function	20
	Total Voluntary Credit Points	**108**
Custom Credits	Write your own credit for approval	10
	Grand Total	**118**

Greenroads CH2MHILL 19

The FHWA has a Sustainable Highway Initiative to identify sustainability characteristics and develop standard sustainability practices. CH2M HILL is developing a Sustainable Highways Self-Evaluation Tool for the initiative. Feedback from test projects indicates that owners are enthusiastic, but confusion remains regarding terminology and criteria. Evaluation results are varied. Agencies with robust system policies and urban and larger projects generally perform better.

EPA, HUD, and the U.S. DOT have a tri-agency initiative to promote sustainable Transit-Oriented Development and Smart Growth. Funding to promote livability principles is available through this initiative.

A participant asked if any state requires transportation projects to have a certain level of sustainability. Dan responded that New York has a requirement for sustainability from design through maintenance. Someone else inquired about linking land use and transportation planning at the highest planning levels. Dan indicated yes, it is being done as agency-level criteria. The FHWA is also looking at the land use-transportation planning link as system-level criteria. When asked, Dan said the Sustainable Highways Self-Evaluation Tool is not yet available to the public. (*Ed. Note: It is now at* www.sustainablehighways.org). A final comment was made by a participant, who said that AASHTO and LEED recently announced separate efforts to develop guidelines for transportation sustainability.

Session 1A

Green Streets and Building Community Capacity

James MacAdam, LEED-AP
Watershed Management Group (WMG)

Biographical Information

James MacAdam is the Green Streets – Green Neighborhoods Program Manager at WMG. James works for watershed education and community development in southwestern neighborhoods, largely through use of green infrastructure strategies. Certified in Permaculture Design, trained in community activism, and a LEED-Accredited Professional, James has worked as a botanist, design consultant, and corporate sustainability coordinator. With a passion for teaching, he has taught ecological and sustainability curriculum in outdoor education, business, community, and college settings.

Abstract

Imagine a neighborhood streetscape which invites residents to enjoy walking, cycling, or socializing along its attractive and shaded streets. Stormwater often perceived as a flooding and pollutant nuisance irrigates native greenscapes to provide multiple benefits for people and the environment. Through Green Streets - Green Neighborhoods, Watershed Management Group (WMG) works with neighborhoods, homeowner associations, businesses, government, and informal community groups to promote and install green infrastructure practices to improve community livability. The program provides citizens with the skills and resources to problem-solve and take action on issues of flooding, stormwater pollution, urban heat island effect, alternative transportation, and neighborhood beautification in their own neighborhoods.

This presentation is available for download by clicking here.

Presentation Summary and Discussion

Watershed Management Group (WMG) is a Tucson, AZ non-profit that engages residents in improving their quality of life and the health of the environment. WMG accomplishes this goal through hands-on implementation projects. These projects cultivate watershed stewardship and develop local leadership to drive policy changes.

In 2006 WMG received a two-year, Bureau of Reclamation grant for water harvesting demonstration sites. The project consisted of public workshops where participants installed water harvesting features at public sites, including three of the City's six City Council Ward offices. An estimated 400 people participated in over 20 public workshops during the two year program.

From 2008 through 2010, WMG developed the Green Streets – Green Neighborhoods program in Tucson. A ten block area in the Rincon Heights neighborhood became a water quality education project, funded by the Arizona Department of Environmental Quality. The University of Arizona was a partner in the project, as was Tucson Clean and Beautiful and the neighborhood association. The project served as a model for the GI retrofit of urban neighborhoods. GI was installed at 17 properties where stormwater infrastructure previously did not exist. Neighborhood volunteers performed much of the work through a series of workshops that taught low-tech, GI retrofit methods. WMG has found that involving neighborhood residents in the project increases awareness and changes behavior.

At this point, James MacAdam was asked, "Who takes ownership responsibility when the landscaping gets too big?" His response was that a Volunteer Association or a Neighborhood Association takes ownership or responsibility. When asked if there was any pushback from the neighborhood, he replied, "No."

A simultaneous project in the Rincon Heights neighborhood was the installation of 80 chicanes, or curb extensions for traffic calming, by Pima County and the City of Tucson. Neighborhood and WMG volunteers planted native vegetation within depressed interior portions of the chicanes to provide bioretention. When asked about sizing the curb cuts, James described the design as an iterative process in partnership with engineers. Facilities in street rights-of-way are subject to City engineering standards. When the capacity of the bio-retention area is exceeded, water overflows into the streets, which are designed to City standards for conveyance.

James commented that they did not replicate some bioretention designs, because they required too much maintenance. For retrofitting streetside right-of-way areas, multiple curb cuts were often needed for effective stormwater mitigation. A follow-on question was asked about erosion control in the bio-retention areas. Numerous resources, such as riprap, plants, slope, etc. are used to control erosion. Controlling sediment is a problem in the first several years until landscaping is established.

James continued the presentation by saying that a key to developing GI projects is to identify and educate neighborhood leaders. The neighborhood leaders then work with volunteers to install and maintain GI projects in their neighborhood. People from 13 Tucson neighborhoods participated in neighborhood leadership workshops to assess for, design, and install GI. Surveys of the workshop participants show that 72% installed a GI feature at their home, 25% worked on a neighborhood GI project, and 30% advocated for watersheds. These results have spread throughout the community. The City of Tucson is now doing its own demonstration projects and has implemented an ordinance with water harvesting requirements for commercial landscaping.

WMG's role is to be a liaison between parties and to help the community with the steep learning curve. WMG has developed a manual entitled "Green Infrastructure for Southwestern Neighborhoods." It is a grassroots, neighborhood perspective on GI intended for both citizens and professionals. The integrated approach to GI is essential to its acceptance. GI is not just about stormwater. For instance, GI can be part of a traffic calming plan and improves the overall quality of life in a neighborhood.

At the end of the presentation, an attendee commented on the difficulties he encountered when trying to do a Green Street subdivision in the City of Las Cruces. He had traveled to Tucson on the Armory tour to see a subdivision that implemented Green Streets – Green Neighborhood projects. Seeing the subdivision made him wonder about financing for the GI. James replied that it's an integrated practice of the private developer.

Session 1B

Trees are the Green in Green Infrastructure

Lance Davisson, ISA Certified Arborist
New Mexico State Forestry

Nicholas Kuhn, ISA Certified Arborist,
Municipal Specialist
City of Albuquerque

Biographical Information

Lance Davisson has worked in a variety of natural resource management positions since 2000 in Washington and New Mexico. Lance works with NM communities, helping them maximize the benefits of trees by providing resources, education, and funding opportunities. As program manager, Lance is an ISA Certified Arborist and administers other Forestry Division programs, including: the NM Forest Re-Leaf Program, the State Big Tree Program, and the Arbor Day Foundation's Tree City USA and Tree Campus USA programs.

Nicholas "Nick" Kuhn is the City Forester for Albuquerque, and has worked in Forestry since 1991 and Municipal Forestry since 2000. He has been an ISA Certified Arborist with Municipal Specialty since 1998. Other activities include being a Technical Advisor to the Sustainable Sites Initiative, which is now in pilot phase to update the LEED rating system with more credit for natural systems. Nick works extensively with local, state and national groups to advocate for trees in all municipal programs.

Abstract

How we plan and choose the best available tools, combining technology and natural resources, has the greatest impact on our municipal environmental systems. Trees should be the primary tool providing the greatest overall benefit for public use and municipal needs. Strategic planning using a green infrastructure approach identifies the best lands to conserve and the best lands to accommodate development, in order to help communities balance environmental and economic goals through strategies that lead to smarter, sustainable land uses.

This presentation is not available online. For more information, contact the City of Las Cruces Sustainability Program at 575-528-3069.

Presentation Summary and Discussion

The New Mexico State Forestry Division works with communities to develop green infrastructure that includes trees. Green infrastructure benefits include improved water quality, air quality, citizen health, and economics. Conventional pipe and pond drainage systems, the "old style," get the water to the river but are not good at creating green space. An alternative approach is to design distributed, small-scale, stormwater controls that clean the water and maintain the natural hydrology within a watershed. Examples of decentralized stormwater controls are:

- Street that has pervious surface.
- Neighborhood with no curbs so that stormwater is slowed and filtered through parkways.
- Super Wal-Mart where trees are planted in the stormwater detention pond.

In addition to treating stormwater, air and soil pollutants can be addressed with tree planting strategies. Trees phytoremediate air and soil pollutants and decrease wind-blown dust and erosion.

An integrated approach to GI creates multiple solutions, jobs, and benefits. The GI team needs to have an arborist, nursery, planner, engineer, and community members. One example of an integrated GI project is a stormwater control structure that incorporated art, educational signage, connection to a trails system, and a public community space. By involving the community in the project development, they become invested in taking care of the space. An integrated approach to GI builds community support for GI.

The presenters were asked who paid for the example integrated GI project. They responded that it was part of a large, planned development. Some of the example photos showed rock ground cover, so someone asked if there are advantages to rock. The presenters said rock is used to slow the first flush flow and prevent erosion.

Where do poorer communities get the funding to do these things? The answer is to work with the space and resources available. Simple treatments, such as tree placement, can make a difference. Nick Kuhn was asked who pays for the tree placement. As the City Forester for Albuquerque, he encourages planting trees but cannot force it. He gets a local neighborhood group involved, brings in technical expertise with the City, and tries to cobble together funding sources. It works when everyone agrees on a vision for a neighborhood. For example, Nick worked with a community housing group to re-direct stormwater that was discharging into the road to instead water trees within the community.

The attendees wanted to know who takes care of tree maintenance. It could be a home owners association or the municipality. Engineering standards need to allow for different designs. Someone asked about handling issues of cost for developers. The presenters replied that cost-effective treatments can be done. Phased or simple treatments, such as detention ponds that are soccer fields, are effective. The municipality, community, and developers need to share responsibility and change the framework for addressing these issues. Doing so will create more valuable properties that benefit the developer. GI has been used for some time in this area, and we need to recognize the benefits, not just the costs.

The issue of allergies was raised. Albuquerque has an ordinance against mulberries, elms, junipers, and poplars. Dialogue is needed regarding allergies and species. There are concerns with identifying certain types of trees as bad, because species variety is good. Mesquite is native, but native is not always best in the city. Sometimes, non-native trees are suitable for a purpose. Albuquerque allows 124 trees to be planted. Desert grasses and scrubs can also pose allergy issues. Some plant species are better at removing heavy metals from the environment and should not be excluded just because they are an allergen. Yarrow removes arsenic; rye grass removes hydrocarbons.

Methods available for evaluating trees as GI are:

- i-Tree (www.itreetools.org), a US Forest Service tool for urban forestry analysis and benefits assessment.
- CITYgreen, a GIS application for land use planning (www.americanforests.org/productsandpubs/citygreen).
- Regional Guides from the US Forest Service.

The USFS southwest regional guide is available and is being updated with more information from cities in the southwest. Other resources are available at: www.nmforestry.com, www.abqtrees.com, and www.treebenefits.com.

A concern was expressed about landscape ordinances that have tree planting requirements but no tree protection plan. Existing trees can be removed and replaced. The solution was said to be better designs. Tree protection ordinances are difficult to pass, but landscape ordinances can be used to achieve this goal. Tree preservations can be challenging. The right people have to become involved. In Las Cruces, people may want to become engaged in the El Paseo project if they want to preserve trees.

The speakers were asked if they have more information on requirements that can go into ordinances. Lance said he can provide assistance. Nick has many ordinances from other cities as references.

Session 1B

Xeriscaping in Chihuahua, Mexico

Toutcha Lebgue Keleng, PhD
University of Chihuahua, Mexico

Biographical Information

Toutcha Lebgue Keleng is a full time professor with a PhD in Natural Resources at the University of Chihuahua, Mexico. He is an Aggie from New Mexico State University with BS in Range Management and MS in Plant Biology. Dr. Lebgue has published more than 20 scientific articles and books, including, *Flora of the Fort Stanton Experimental Ranch, Lincoln County, NM*, *Grasses of Chihuahua* in 3 editions, *Manual of Forage Plants*, *Manual for the Identification of Range Plants, Manual of the Xeriscape Plants, Searching for Nelson: A wildflower Guide for the Copper Canyon Region,* and most recently, *Cacti of Chihuahua: State Treasure at Risk of Extinction* in 2010.

Abstract

Xeriscaping is a concept of creating beautiful gardens and yet conserving huge quantities of water as compared to the traditional landscaping systems. Born in Denver, CO in 1981, the concept was soon embraced by many agencies especially those dealing with water, land use, sustainable construction, and environmental conservation, just to name a few. It is a way of doing gardening by using native plant species that can provide beauty to the eyes but at the same time survive on a minimum amount of water. The southwestern United States and the northern states of Mexico are entities that survive with very limited natural water supply. Chihuahua is one such state and its government, being aware of the problem, has adopted the xeriscape technique and has developed educational programs to teach and urge the Chihuahuan communities to minimize the use of water by creating their own xerigardens in the front or the backyards of their homes as well as in the public places in the cities.

This presentation is available for download by clicking here.

Presentation Summary and Discussion

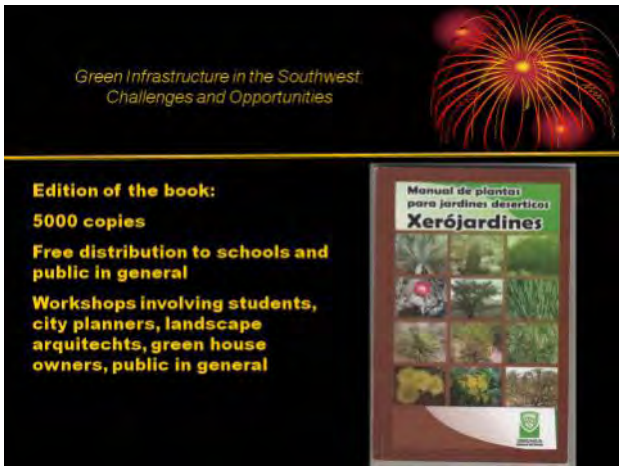
The City of Chihuahua, Mexico, is in the State of Chihuahua, which has 70% of its area in the dry climate zone. The National Water Commission of Mexico (CONAGUA) has calculated that the cubic meters of natural water available per person per year has dropped dramatically from 1950 to 2005 and is projected to drop further by 2030.

Water availability is probably not the main problem for the City of Chihuahua at this time, but it is a future problem critical to the survival of the City. Due to limited availability, the City has regulated water distribution since the 1980's. Water is available to different parts of the City at different times. For instance, Toutcha says he receives water twice a day on the regulated system. The government is building water treatment plants to address the water availability issues. Currently, there are two water treatment plants. Water is not used for drinking unless it is filtered (usually).

The government has implemented steps to address water availability. A water storage tank (cistern) is mandatory for all houses. Houses are limited to two cisterns a day, which allows for all people to get water. The size of tank is according to how much money the owner has; the more water used, the more the owner has to pay.

The Xeriscape concept was developed in the City of Denver, CO in 1981 and has been adapted for use by the City of Chihuahua in the last 7 years. The City has a state-governed, green house that grows plants to use for xeriscaping.

The government has developed a xeriscaping booklet/ manual for desert environments that includes information on soil type, water requirement etc. Approximately 5,000 copies have been distributed free to people, along with educational talks. The City plants the species in the manual in public streets and on barren street corners. The government also gives plants free to people.



Toutcha was asked if the medians are irrigated. He replied that they receive an initial watering and then are left to natural rainfall.

When asked how the government is teaching people, he said the government sends people to schools. They work with the older kids, who take the manuals to their parents. The government places announcements in the newspaper for workshops, where the manuals are distributed.

Several questions were asked about the cost of water. Why does a liter of water cost more than a liter of gasoline? The cost is 10 pesos for drinking water and 8 pesos for gas. Is this price right? Toutcha says it is $26 for 20 cubic meters. It's unclear if the cost is due to obtaining the water, distributing it, or both.

Someone asked how the effluent from wastewater treatment plants was distributed. 75% returns to landscaping at the university and in the City, and 24% returns to the river.

Toutcha was asked if the water situation affects the amount of new development. He replied that quite a bit of housing development is occurring in the City because of the water storage system discussed earlier. He was then asked if the water stored at houses was from an untreated well source. It is treated City water, and the quality depends on how clean the water cistern is. In response to a question about the cistern locations, Toutcha said they are placed on the roof or in the ground by the water line. If it is on the ground, the owner needs a system to pump the water into the house; however, the cistern on the ground can be larger.

Session 1C

Drainage Design: The Quantity/Quality Relationship

Katrina M. Martich, PE, CPESC
Martich Professional Services, PLLC

Biographical Information

Katrina Martich is the Owner and President of Martich Professional Services (MPS) in El Paso, Texas. The company specializes in the protection of soil and water resources through wind and water erosion control, stormwater management, pollution prevention planning, and low impact development. Before starting MPS, Katrina was an Environmental Manager for the City of Arlington, TX, where she led a staff that implemented the City's Phase I MS4 Stormwater Management Program. Katrina started her career doing hydraulic analyses for watershed studies with the U.S. Army Corps of Engineers, Fort Worth District. After receiving her master's degree, she moved into environmental positions with the District, where her experience included multi-media compliance audits, environmental investigations, remediation design, NEPA compliance, and environmental permitting.

Abstract

The National Research Council's 2008 report on urban stormwater management documented that designing drainage infrastructure for flood control and adding "end-of-pipe" treatment for the first flush of pollutants wasn't solving the stormwater pollution problem in urban areas. This presentation looks at the relationship between the quantity and quality of runoff. By addressing runoff quantity through Low Impact Development design methods, it is possible to design drainage infrastructure that protects the public from the quantity of runoff while also improving water quality.

This presentation is available for download by clicking here.

Presentation Summary and Discussion

The design of drainage infrastructure to manage storm water quantity has historically been accomplished separately from management of storm water quality. Drainage design is driven by the National Flood Insurance Act, which requires designing for the 100-year peak flow rate. The flood protection requirement is met with detention/retention basins, levees, and straightened, lined channels.

Driven by requirements of the Clean Water Act, management of storm water quality focuses on designing structures to treat the "first flush" of runoff. Treatment structures are typically "end-of-pipe" devices or retrofits added to the drainage system at the end of design or after construction. They are referred to as Best Management Practices (BMPs).

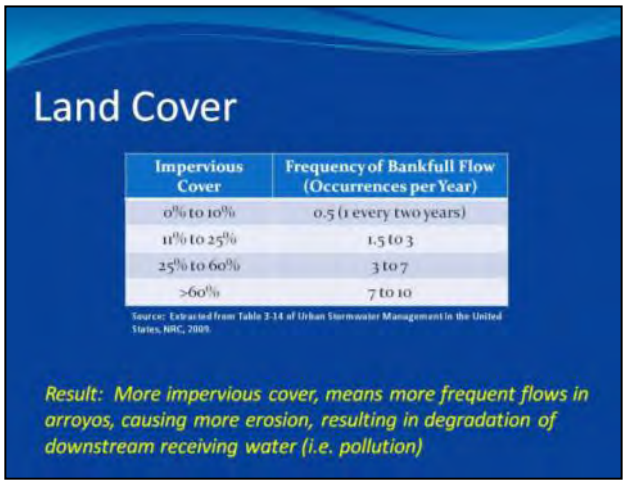
The result of this segregated approach to stormwater quantity and quality has been a significant loss of the natural riparian ecosystem due to construction of drainage infrastructure, while the BMPs have been largely ineffective in improving water quality.

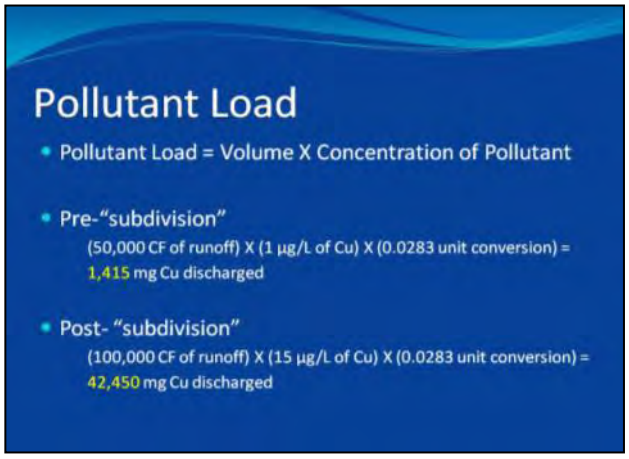
In 2006 the EPA commissioned the National Research Council (NRC) to evaluate the storm water permit program under the Clean Water Act. The resulting report, *Urban Stormwater Management in the United States*, is available at:

http://www.nap.edu/catalog.php?record_id=12465

Some of the NRC's key findings that relate to water quality are:

- A direct relationship exists between land cover and the biological condition of receiving waters.
- Pollutant load increases with an increase in storm water runoff.
- Individual storm water control measures are not adequate for improving water quality.





The NRC's report contains many recommendations to improve water quality. The common theme of the recommendations is an integrated, holistic approach to drainage design that addresses both storm water quantity and quality. The report uses the term Stormwater Control Measures (SCM), instead of BMP, to represent methods that address both quantity and quality.

The NRC report identifies Low Impact Development (LID) as an important means to mitigate the effect of storm water on water quality. Principles of LID design for storm water management include:

- Mimic the original hydrograph.
- Design for volume and then check for flow rate.
- Check the design for a range of storm events (2-, 10-, 25-, and 100-year).
- Retain (and use) storm water as close as possible to the lot on which it fell.
- Reduce imperviousness where possible; and mitigate for increased imperviousness where it's not possible.

Katrina was asked about new EPA regulations and permits as a result of the NRC report. She said it's unknown what EPA will do. However, they are already promoting LID. Permit writers in Dallas (EPA Region 6) have said the new MS4 permits will have LID wording in them, but it is unknown how prescriptive the wording will be. EPA is also considering issuing MS4 permits on a watershed basis instead of a municipality basis. The Albuquerque area is one of three pilot sites being used to test this permitting approach. It requires the many stakeholders in the watershed to come together to solve issues related to urban runoff and pollutants associated with storm water.

Another participant asked how LID would be applied on a watershed basis. Katrina responded with examples, saying LID works best when applied over an entire watershed, not just site by site. Watershed based examples are policies such as arroyo protection, floodplain preservation, connected linear parks, green space ordinances, etc. The next step is to look at drainage basins and subdivisions within the watershed for LID applications, such as laying out the subdivision to follow the terrain of the basin, disconnecting storm drain pipes from the arroyo by using detention areas within a floodplain park, and using a series of small storm water structures throughout the subdivision. Finally, LID is applied at the site level with storm water harvesting for landscaping, pervious pavement, and similar features.

Session 1C

Construction Products and Techniques for Low Impact Development

Melissa Y. Gorham, EI, LEED-AP, GB-98
Contech Construction Products, Inc.

Biographical Information

Melissa Gorham has a bachelor's degree in Civil Engineering, and is a licensed contractor. She has obtained her LEED AP Accreditation and is an active Realtor in Southern New Mexico. Melissa has over 8 years of experience in Project Management and Development. These endeavors include Managing Land Development Projects, Civil Engineering, Construction Management, LEED Implementation, marketing, and Real Estate. Melissa is currently working for Contech Construction Products as a Project Consultant/Sales Engineer. She continues to pursue Green Development as a member of the Boldt Family Trust's Real Estate and Land Development team. Melissa has a passion for the implementation of green principles, not only in construction, but in everyday life.

Abstract

There are many methods that can help to lower the impact of developing sites and create sustainable developments for the future. This can be accomplished through the use of a range of BMP options and in obtaining the knowledge necessary to better understand and implement LID. We will provide information on specifying and designing for the use of the most appropriate products and solutions. On top of this, we will identify opportunities to obtain valuable LEED credits if your projects are involved in LEED certification through appropriate solution selection.

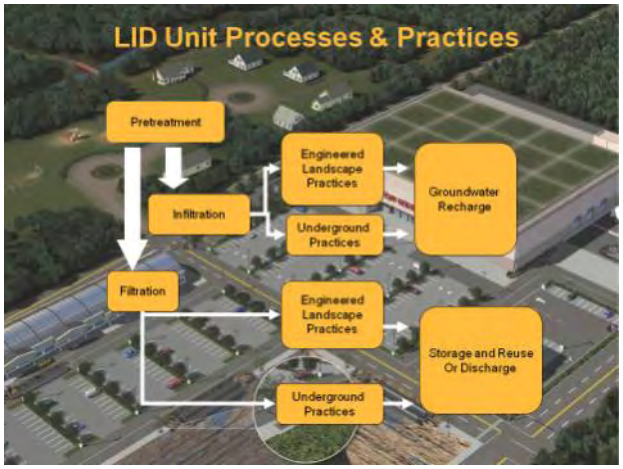
This presentation is available for download by clicking here.

Presentation Summary and Discussion

Low Impact Development (LID) is an approach to stormwater management modeled after nature. The basic principle is to manage rainfall at the source using uniformly distributed, decentralized, micro-scale controls. The goal is to mimic pre-development hydrology by infiltrating, filtering, storing, evaporating, and detaining runoff close to its source.

The basic steps to LID are:

- Identify hydrologic goals.
- Identify pollutants of concern.
- Select unit processes to address the above.
- Based on site constraints and other factors, select and size stormwater management practices that incorporate the unit processes.

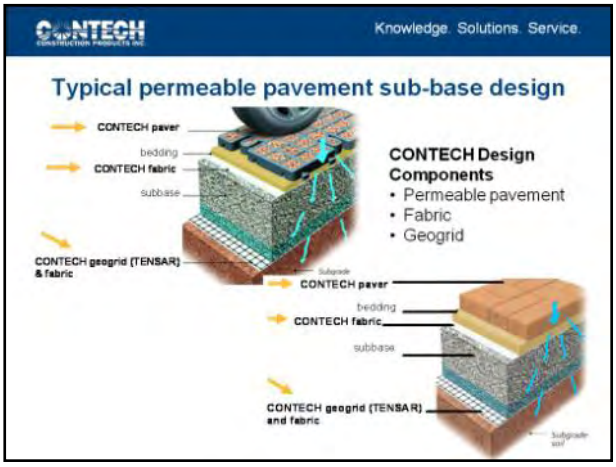


Unit processes can be divided into five categories: pretreatment, infiltration, filtration, storage and reuse, and flow controls. Implementation of these processes qualifies for LEED credits in New Construction and Major Renovations. CONTECH is a provider of products for the stormwater management practices that are used to implement LID unit processes.

Pretreatment should always be used unless absolutely infeasible. Pretreatment captures the majority of oils, larger sediment, and trash, which prevents damage to the remainder of the stormwater system.

Infiltration and filtration help to reduce runoff volume, but their most important function is to improve water quality by removing pollutants of concern. Infiltration is the most effective option, where feasible. Filtration is used where infiltration is infeasible due to poor soil conditions, high groundwater, proximity of foundations, or other site constraints. Some sites may require a combination of the two processes.

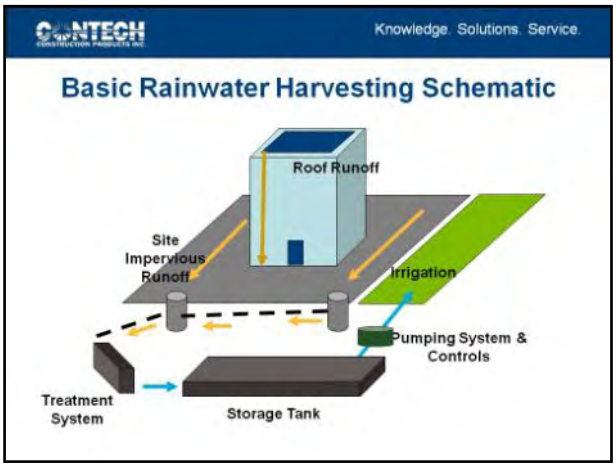
Infiltration may be accomplished through surface or subsurface practices. Practices that facilitate infiltration through the ground surface include pervious concrete, grass and gravel pavers, geogrid, turf reinforcement mats, and other permeable ground surface covers. Proper design of the sub-base and sub-surface reinforcement is essential to the effective operation and life-span of the porous surface.



Underground infiltration methods are a cost-effective solution in urbanized areas where land value is high or space is not available for infiltration surfaces. Underground infiltration practices are typically dry wells and detention/retention devices, which collect stormwater and allow it to infiltrate.

Filtration practices may be engineered landscapes or underground structures. In engineered landscapes, tree boxes and other types of planters are designed with media specifically selected to filter stormwater and capture pollutants. Underground filtration structures consist of a treatment chamber through which stormwater flows.

Storage and reuse of stormwater and flow controls are the unit processes used to reduce runoff volume, peak flow, and duration. Storage and reuse includes rainwater harvesting, which is becoming more common place.



In addition to managing stormwater, LID should minimize the impact development has on natural resources, such as wetland areas and streams. Examples of tools to minimize the impact are bridge designs that span sensitive areas and wall systems to reduce the length of slope transitions.

All stormwater practices need to be maintained. Implementing LID on a site includes preparing a maintenance plan. The plan should contain inspection schedules, routine maintenance procedures, and non-routine maintenance requirements. All unit processes should be inspected at least annually. Routine maintenance may involve litter/debris removal, unclogging outlet structures, and vegetation management. Dredging, repairs, and media/vegetation replacement are examples of non-routine maintenance.

CONTECH provides design support to evaluate, select and design the LID unit processes for the hydrology and pollutants on a site. They also have design software that is compatible with U.S. Army Corps of Engineers (USACE) and Federal Highway Administration hydraulic models. CONTECH's LID resources are available at: www.contech-cpi.com.

Session 2A

Facilitating Affordable Green Infrastructure Retrofits: Developing Design Standards for Tucson, AZ

Catlow Shipek
Watershed Management Group

Biographical Information

Catlow Shipek has consulted with engineering firms, city departments, neighborhoods, businesses, and organizations regarding green infrastructure design and implementation. Catlow has led over 50 hands-on workshops to engage residents in low cost and affordable practices to improve the urban environment and build community as well as providing instructional workshops for environmental professionals through WMG's Water Harvesting Certification. Catlow has a Master's Degree in Watershed Management from the University of Arizona and experience with erosion and sedimentation research in southeastern Arizona's rangelands.

Abstract

Neighborhoods, community leaders, and municipal agencies are increasingly choosing green infrastructure practices in place of conventional grey infrastructure. Appropriately designed green infrastructure practices can address a variety of neighborhood-scale issues including stormwater, urban heat island, and community livability. A general lack of experience with green infrastructure practices in the southwestern semi-arid environment has slowed the planning and design phases. Watershed Management Group (WMG) recently developed a set of green infrastructure design standards and conceptual renderings in coordination with the City of Tucson. These green infrastructure standards will facilitate a more effective communication process during the planning and design phases among neighborhood groups, engineers, and municipal agencies to reduce potential roadblocks and associated costs.

This presentation is available for download by clicking here.

Presentation Summary and Discussion

WMG, a non-profit organization, started in Tucson, AZ installing green infrastructure demonstration sites. The organization has worked on small and large scale projects, including community partnerships, co-ops, school yard programs, and a green streets program. It has developed a certification program for water harvesting that focuses on the principles and how to apply them.

An integrated approach to green infrastructure addresses many infrastructure issues faced by cities. GI can provide lower-cost options for retrofitting "gray infrastructure." Stormwater management with GI solves both flooding problems (quantity) and quality issues. GI can also reduce the heat island effect. The question is how to integrate these and other issues into solutions. The answer is to work from bottom up to affect policy.

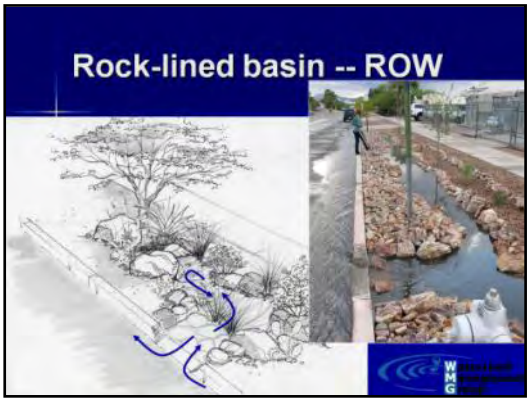
Several design and implementation issues hinder the adoption of GI. Cities want to see on-the-ground-examples before committing public resources. The public demand for GI is increasing, but there's a lack of standardized best practices and clear guidelines. The result is an increase in planning time and engineering costs when GI is used.

All sorts of communication issues arise among stakeholders when GI is implemented. Some neighborhoods in Tucson have moved ahead with GI on their own through permits from the City. The result is a lot of different designs with different principles.

WMG obtained a grant to develop standard GI designs for the arid southwest. The focus is to make GI practices

affordable and accessible. The designs are intended to be simple, effective solutions that can be easily adapted to site conditions. Designs are conceptual for residents and community leaders. Catlow presented several examples, including:

- Rock-lined basin in ROW; water flows in and then to another small detention basin; some water still flows down the curb.



- Shallow-sloped basin in ROW; grade of three to one or less, need rock apron near inlet/outlet.

- Curb cuts.

Discussion accompanied presentation of the examples. Catlow was asked if the City of Tucson accepted maintenance. He replied no, they do not want to accept the maintenance. A maintenance agreement is required. Bermuda grass has been a maintenance issue and needs to be eradicated from the installations. It grows easily and causes issues.

When asked if there is a procedure for future inspections, Catlow said WMG does follow-up, although there is no formal procedure. The City has some power to inspect and require property owners to address issues. WMG is working on a grant for a green steward group to inspect and maintain the GI sites. Lack of knowledge is often a problem. People do not know what is or isn't a weed.

Development of GI design standards is currently in the monitoring and evaluation process. WMG continues to make improvements to functionality and aesthetics. Further research is needed on the storm water quality and quantity impacts of GI. Initiatives underway include designing for new development, promoting new policies and ordinances, and training. In 2010 WMG published *Green Infrastructure for Southwestern Neighborhoods* (www.watershedmg.org/green-streets). WMG is now developing a separate brochure for each GI practice.

At this point, someone mentioned that GI in the Las Cruces area is constrained by the requirement for a certain amount of runoff to reach the Rio Grande. It was asked if anyone has explored how a requirement like this affects GI. Catlow said the Pima County, AZ flood control authority has done an initial analysis. They determined the best GI can do is reduce runoff to pre-development patterns. Based on these results, GI would not change the amount of runoff reaching the river. In response, a comment was made about the Rio Grande Compact, which requires water delivery to Texas. The presentation participants discussed the potential need for an agreement with the Elephant Butte Irrigation District (EBID) to facilitate the use of GI in the Las Cruces area.

Session 2B

Integrated Community Planning: Finding Ways to Do More with Less

Kevin Shepherd, PE
HDR Engineering, Inc.

Biographical Information

Kevin Shepherd has more than 15 years of experience working with cities, counties, and other agencies in the areas of project and program management, planning, design, and construction for a wide variety of municipal infrastructure improvement and development projects. His experience includes municipal consulting, sustainability and energy management, master planning, roadway schematics and Plans, Specifications, and Estimates (PS&E), general site civil design, public involvement, program management, permitting, and construction inspection/administration. He oversees HDR's emerging programs for energy management and sustainability for the community sector and is actively involved with organizations at the local, state, and federal levels to track and implement legislation.

Abstract

Many communities are looking to be more "green" to recruit and retain businesses and residents. Legislation and funding programs are encouraging GI/LID, energy conservation, emissions reduction, and smart growth principles. At the same time, the recession has cities under pressure to do more with fewer resources. To succeed in this environment, city departments must work together to identify additional efficiencies that can only be found when approaching things from a holistic and interdisciplinary perspective. This presentation highlights an approach and tools that are helping communities to identify initiatives that help achieve sustainability goals across departments and agencies; apply for and secure federal funding; and implement projects ranging from downtown redevelopment plans to ordinance and code revisions to green infrastructure design and construction.

This presentation is available for download by clicking here.

Presentation Summary and Discussion

Integrated Community Planning is an approach that guides design and development of sustainable communities. The shift from traditional to sustainable development is driven by market trends. The trends are affected by the recession, population growth, the rising cost of gas, changes in climate and weather patterns, decreasing availability of natural resources, regulatory requirements that push green/sustainable development, and increasing priority on resilience and redundancy so communities will survive changing conditions.

Integrated stormwater management is an important part of sustainable development and integrated planning. However, communities must typically overcome many obstacles to change from conventional to integrated stormwater management. The challenges presented by these obstacles are best overcome by:

- Low Impact Development with the goal of maintaining pre-development hydrology.
- Integrated Stormwater Management Practices that incorporate ecological and engineering strategies to address both water quantity and quality.
- Integration of stormwater and land use planning.

The steps to developing a comprehensive, integrated, sustainability strategy are:

- **Define**: Visions and goals.
- **Measure**: Energy/GHG baseline (good starting point).
- **Plan**: Identify and prioritize strategies.

- **Implement**: Identify funding and partners to implement the plan.
- **Monitor and Report**: Sustainability metrics towards meeting goals.

In HDR's model, there are 12 elements of sustainable communities: Air (Climate), Community, Culture, Energy, Economy, Environment, Facilities, Land Use, Mobility, Sustenance, Water, and Waste. The presentation includes descriptions and examples for each of the 12 elements.

At this point in the presentation, participants raised the topic of stimulus funding and asked if it worked to encourage sustainability. Kevin replied that it has, especially in the areas of energy conservation, renewable alternatives, and transit. It has also increased transparency in government, with all of the reporting and other requirements that accompanied the funding. One other benefit is an increase in regional partnerships and collaboration. The Department of Transportation's Tiger II program and similar programs have gotten people to work together and coordinate more effectively.

Current standards and ordinances can become obstacles to Integrated Community Planning when they have not been updated to address the methods of an integrated approach. Another challenge is that many cities still operate as separate departments, and don't communicate across department lines very well. The best way to overcome these challenges is to get everyone together in the same room to work together.

The process of Integrated Community Planning starts with a vision, evaluates and prioritizes all 12 elements simultaneously, and concludes with an implementation plan that identifies specific actions, assignments, deadlines and funding. To aid in comparing and prioritizing projects in terms of sustainability, HDR has developed Sustainable Return on Investment (SROI) framework and tools. HDR's SROI methodology quantifies a project's benefits based on a triple bottom line of social, economic, and environmental benefits, and can compare alternatives for optimizing the total value (cash plus non-cash) of a project. More information on the tool is available at:

www.hdrinc.com/about-hdr/sustainability/tools-methodologies

During the Integrated Community Planning process, it is important to think regionally, not just locally. Consider multiple time frames, including long-term ones such as 50-years. Look for ways to build on existing ecosystems and optimize available open space. Throughout the process, approach the project as a whole. The idea is to plan complete neighborhoods with mobility options. Walk-ability should be paramount. Infill, redevelopment, and mixed uses are desirable. Finally, make sure the City Code is updated to facilitate the desired outcomes.

Important things to remember when implementing Integrated Community Planning are:

- Think holistically (technically and geographically)
- Know the baseline.
- Have a vision, set goals, and develop strategies to achieve them.
- When prioritizing, use more than financial ROI to evaluate short- and long-term benefits of projects.
- Engage, educate, and over-communicate.

Session 2C

Ecological Restoration of the Rio Grande

Kevin Bixby
Southwest Environmental Center

Biographical Information

Kevin Bixby is the founder and Executive Director of the Southwest Environmental Center (SWEC). The Center works to protect and restore native wildlife and their habitats in the Southwestern borderlands, through advocacy, education, and on-the-ground projects. The Center's current campaigns focus on restoring the Rio Grande, protecting Otero Mesa from oil and gas development, and making sure Mexican wolves resume their role as top predators in southwestern ecosystems. Kevin lives in Las Cruces in a passive solar adobe house that he and his family built.

Abstract

This presentation discusses current efforts to restore the Rio Grande to ecological health using a "string of pearls" approach that focuses on restoring separate nodes of aquatic and riparian habitat located along a river reach, rather than trying to restore its entire length. Specific examples of how that approach is being implemented in southern New Mexico are described, along with challenges to ecological restoration posed by current management of the river and tributaries for flood control. The presentation also discusses whether or not restoration and flood control are compatible.

This presentation is available for download by clicking here.

Presentation Summary and Discussion

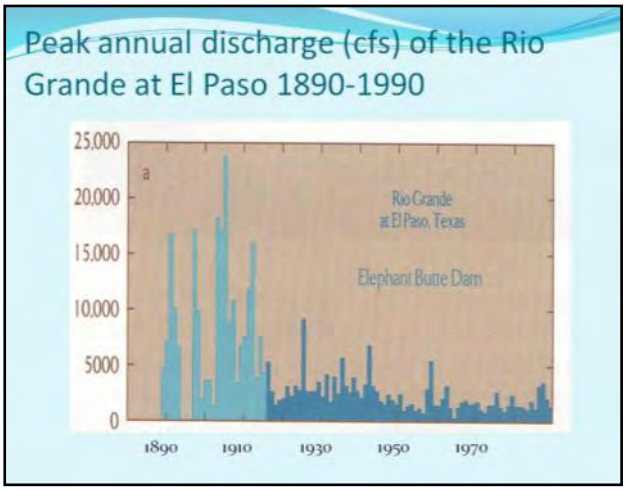
Wetlands are an essential part of the riparian ecosystem. They store water, provide natural flood protection, cleanse the water, recharge groundwater, control erosion, and nurture all types of species. In the southwest, wetlands comprise only 1% of the land area, yet at least 75% of southwestern vertebrate species depend on wetlands for some or all of their life cycle.

The Rio Grande is the lifeline for over 500 vertebrate species. Prior to 1870, the Rio Grande's characteristics were very different from today. Historically, it could be characterized as:

- Perennial flows (most years).
- Peak flows—snow melt, summer rains.
- Meandering, migrating channel.
- Dynamic mosaic of plant communities.
- Flooding as a key process.
- Abundant fish and wildlife.
- Wetlands estimated at 2% to 10% of floodplain.

These natural characteristics were changed by clearing of floodplain vegetation and wetlands for farming and construction of Federal water projects. Elephant Butte Dam was built in 1916. Between 1934 and 1943, the river was channelized for 191 miles. Nearly 50% of the river length was lost below El Paso. Meanders were removed, banks were armored, and levees were built.

The result has been significant changes to the river ecosystem: modifications of the river's natural flow patterns to meet irrigation demand; elimination of slow water aquatic habitats in the river; and the near total loss of wetlands and riparian woodlands in the floodplain. Numerous native fish species are gone from the Rio Grande.



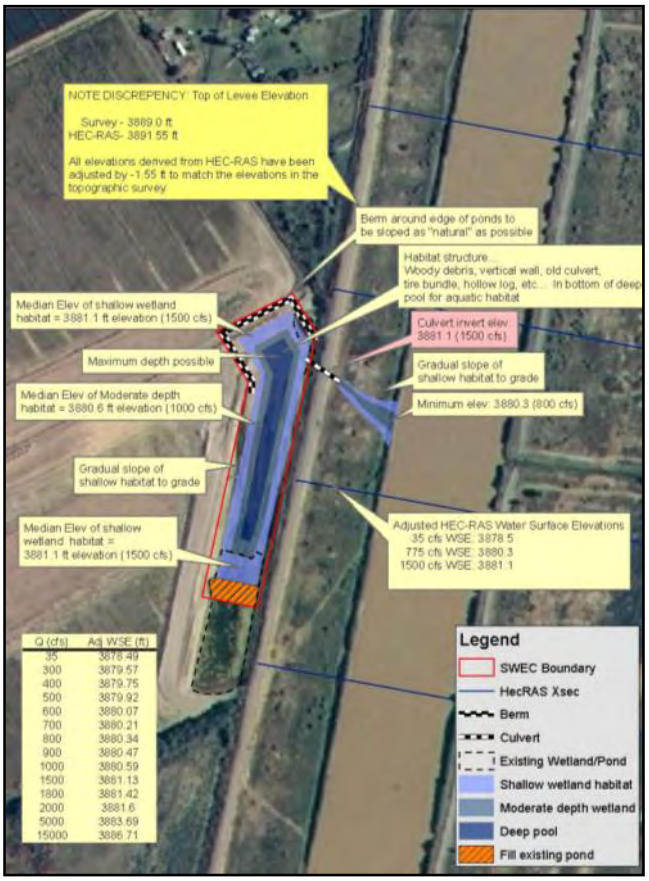
The SWEC's approach to restoring the Rio Grande is to re-engineer a "mini-Rio Grande" that functions like the old river on a smaller scale. The approach requires:

- Obtaining a share of water for the river.
- Restoring slow-water habitats.
- Modifying timing of water releases to mimic spring floods.
- Reintroducing native fish.
- Controlling exotic plant and animal species.

The "string-of-pearls" approach to restoration starts with restoring discrete locations along the river that are conducive to restoration. Land ownership, water availability, soil type, habitat, old side channels, riparian vegetation, and many other characteristics determine if a location is a good restoration site. These separate restoration sites are ecosystem "beads." With enough "beads," the river can be the chain that connects the restoration sites, stringing them together like a pearl necklace into a functioning riverine ecosystem.

The Picacho Wetlands/Mesilla Valley Bosque Park is one of the ecosystem "beads." It was purchased by the NM Game Commission as the "old refuge" in 1933. Starting the late 1990's, SWEC worked to establish a state park and create a wetlands project at the old refuge site. With a couple of EPA Clean Water Act grants, SWEC designed and built the Picacho Wetland Project within the area that would become the state park. The project consisted of excavating two ponds, removing salt cedar, and planting native vegetation. It was completed in 2003, and the Mesilla Valley State Park opened in December 2008.

The La Mancha Wetland Project is another ecosystem "bead." Design is finished, and construction is pending until funding becomes available to finish the project.



Session 2C

Low Impact Development Measures for Protection of Groundwater

John T. Kay, PG
Daniel B. Stephens & Associates, Inc.

Biographical Information

John Kay has 10 years of experience in water resource assessments, field data collection, instrumentation, and hydrologic investigations. He holds a BS degree in geology from Northern Arizona University and an MS degree in hydrology from The University of Arizona. John specializes in vadose zone and near surface hydrologic processes, including recharge monitoring/modeling, and surface water-groundwater interactions. He has evaluated and designed numerous LID features to mitigate the impacts of urban development projects on groundwater. Currently, John is overseeing a regulatory driven monitoring program at a large private property in Malibu, CA, where complex irrigation, LID, geotechnical stability, and storm runoff issues are conjunctively managed to best protect the entire hydrologic system.

Abstract

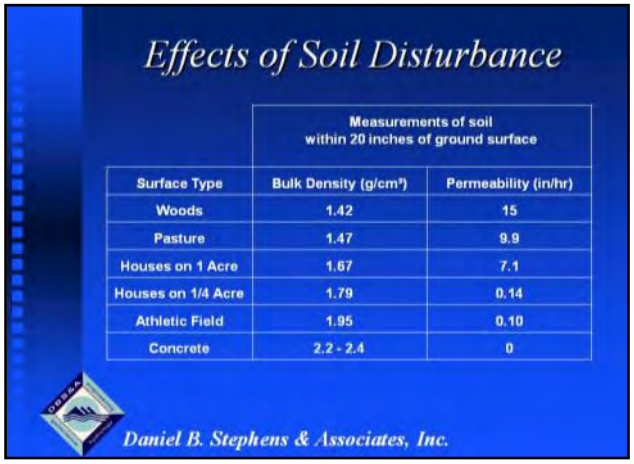
Low impact development (LID) features that rely on capture and infiltration of stormwater are frequently designed and implemented without taking subsurface characteristics into consideration. As a result, these features may fail over the long term or result in degradation of groundwater quality. Incorporating subsurface characteristics, including use of subsurface monitoring and soil testing, can result in LID features that enhance benefits to groundwater, achieve surface water objectives, and have greater longevity. This presentation discusses several unique methodologies that incorporate subsurface characteristics into LID design.

This presentation is available for download by clicking here.

Presentation Summary and Discussion

Infiltration systems are often promoted as a stormwater management practice that helps to maintain a site's pre-development hydrology and recharge groundwater. Unfortunately, soil and subsurface conditions are not always evaluated to assess the viability of infiltration at each site where it is implemented. In addition, it is important to evaluate, quantify, and mitigate impacts to groundwater when using infiltration systems.

Both surface and subsurface methods are available to assess the permeability and potential infiltration rates of soils. It is important to remember that test results are dependent on the soil conditions at the time of testing. Development can alter these conditions. Developed areas that appear to facilitate infiltration, such as athletic fields, may be compacted through use to the point of having low permeability.

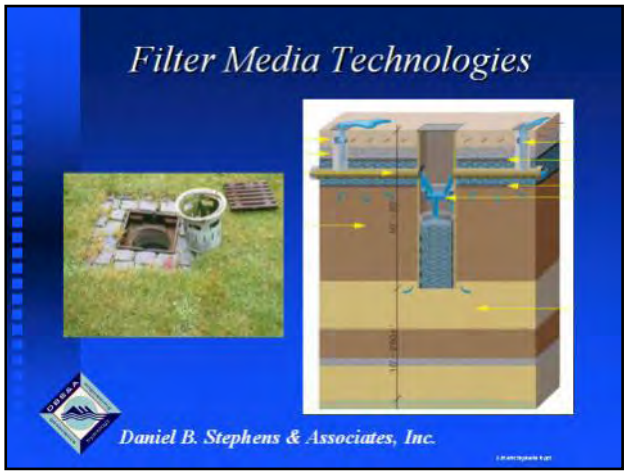


	Measurements of soil within 20 inches of ground surface	
Surface Type	Bulk Density (g/cm³)	Permeability (in/hr)
Woods	1.42	15
Pasture	1.47	9.9
Houses on 1 Acre	1.67	7.1
Houses on 1/4 Acre	1.79	0.14
Athletic Field	1.95	0.10
Concrete	2.2 - 2.4	0

Pollutants of concern in stormwater discharges to surface water can also contaminate groundwater, if the stormwater is not adequately treated before it reaches the groundwater. Several treatment processes occur as stormwater percolates through the vadose zone (i.e. unsaturated soil, with some exceptions) to groundwater, including filtration, precipitation, chemical fixation, oxidation, denitrification, and biological degradation. However, these processes alone are generally not sufficient to remove all the pollutants introduced by stormwater over a project's lifetime. The groundwater will be impacted unless mitigation measures are implemented.

The first step in mitigating impacts to groundwater is to identify the goal, which may be to protect groundwater quality or could be to improve quality that has already been degraded. The next step is to evaluate non-structural and structural methods and then design the methods that are best suited for the site conditions. With groundwater, it is very important for the methods to be site-specific.

Non-structural methods for mitigating stormwater impacts on groundwater consist of practices that minimize disturbance and protect natural water features and recharge areas. Structural measures can be designed to treat a specific volume of stormwater (quantity-based design) before it infiltrates or to treat for removal of specific pollutants before infiltration (quality-based design).



After the stormwater is treated to mitigate its impact on groundwater, a variety of systems may be used to facilitate infiltration and groundwater recharge, including permeable surfaces, bio-retention, and dry-wells. Daniel B. Stephens and Associates has developed a self-cleaning system to facilitate infiltration of stormwater. When the system's capacity is exceeded, the overflow discharges to natural drainage ways.

After development of a site, it is important to monitor conditions in the subsurface to ensure infiltration and groundwater recharge are occurring as designed and pollutants are not accumulating to unacceptable levels. Permeability and other parameters should be monitored to identify changing soil conditions before they become a problem.

In summary, the following are important to protection of groundwater when using infiltration as an LID practice:

- Remember the subsurface.
- Solutions are site specific.
- Prevent first, mitigate second.

Keynote

Low Impact Development and Green Infrastructure Pathways to Success

Neil Weinstein, PE, RLA, AICP
Low Impact Development Center, Inc.

Biographical Information

Neil Weinstein is the Executive Director and one of the founders of the Low Impact Development (LID) Center, Inc. Formed in 1998, the LID Center is a non-profit organization that focuses on the research and implementation of innovative and sustainable infrastructure, stormwater, and water management strategies and techniques. Neil helped develop the original concepts and foundations of LID over 15 years ago. He has worked across the country helping communities to implement LID and Green Infrastructure. Recently, he worked with EPA and the Department of Defense on development of Section 438 of the Energy Independence and Security Act. Neil was one of the original signers of the Letter of Intent to develop Green Infrastructure with EPA and is currently the Co-Chair of the first national American Society of Civil Engineers conference on Green Highways and Green Streets.

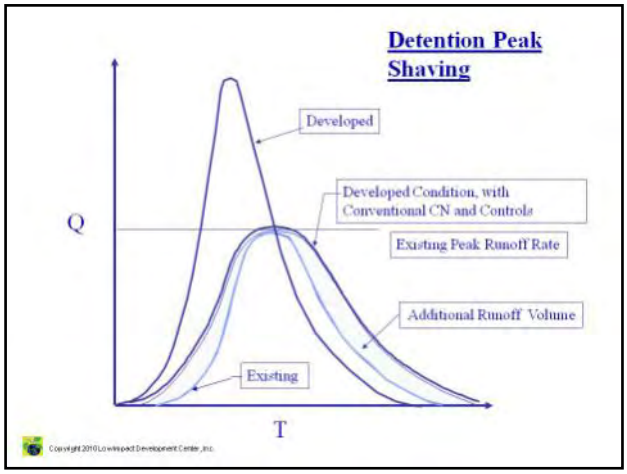
Abstract

This presentation shows how to address the many complex challenges that communities encounter when considering incorporating LID into their stormwater and land development programs, with a focus on the southwestern US. The attendee gains a perspective on the best strategies to address the planning, regulatory, political, community development, and financial requirements of LID implementation through the experience of the LID Center, which has worked on this issue throughout the nation.

This presentation is available for download by clicking here.

Presentation Summary and Discussion

In the last quarter of the 20th century, the rate of development in the United States was more than twice the rate of the population growth. One quarter of all development was constructed between 1982 and 1997. The conventional drainage controls for most of this development were based on collecting, concentrating, and conveying stormwater runoff in a centralized, controlled manner. Design criteria focused on reducing the peak discharge flow rate, while failing to address the increased volume of stormwater runoff generated by development. Watershed hydrology was largely ignored.



The result has been a negative effect on the waters receiving the stormwater runoff. Approximately 40% of assessed waters do not meet Water Quality Standards. Despite stormwater regulations and billions spent on water quality projects, water quality is virtually unchanged since the Clean Water Act was passed in 1972. During this period, Best Management Practices (BMPs) required by regulations have primarily been end-of-pipe controls.

The results show that end-of-pipe controls have not been effective in reducing the water quality impacts of stormwater runoff. Therefore, the focus of BMPs has shifted to source controls in recent years. LID is an important tool for treating stormwater at its source. In addition, the benefits of LID extend beyond stormwater management and include environmental, economic, and community benefits. One example is the reduction in heat island effect, which in turn reduces energy demand for

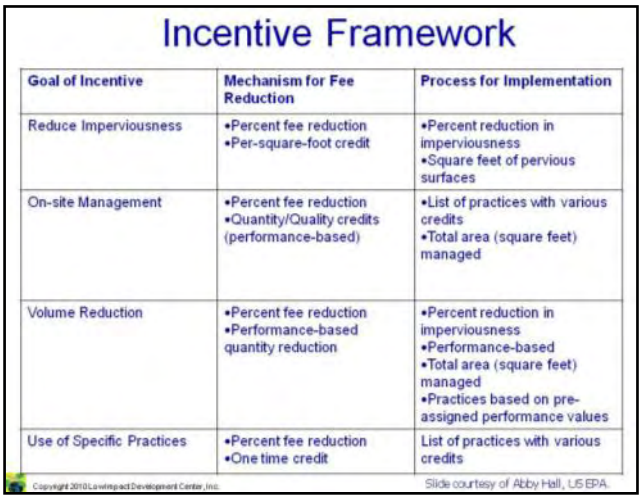
cooling, conserves water by reducing evapotranspiration, and provides health benefits.

LID Integrated Management Practices (IMPs) is the term used for the non-structural and structural strategies used to achieve stormwater management goals. Non-structural strategies are incorporated into the site design and landscaping to minimize the increase in stormwater volume. Structural practices are needed when non-structural practices alone cannot achieve the stormwater management goals. IMPs are essentially the same as BMPs; however, the term BMPs carries with it a structural connotation. LID uses a range of smaller, economical devices that control runoff at the source. Examples are:

- Vegetated buffers
- Bioretention integrated into design elements, such as a parking lot island
- Bioretention cells, also called rain gardens
- Porous pavement
- Rain barrels
- Cisterns
- Soil amendments to improve infiltration, aeration, moisture retention, and nutrients available to establish vegetation
- Green roofs

At this point, Neil Weinstein commented that LID is not necessarily best suited for every site, nor will it solve all stormwater management issues, but is an important tool for improving water quality. There is still a place for large, watershed projects.

Unfortunately, current stormwater regulations do not typically promote LID. In some cases, they impede LID by introducing uncertainty into the review process for projects that try to use LID. Regulations should be updated to include volume and hydrologic performance requirements. Incentives can supplement revised regulations to encourage the use of LID. Several types of incentives are possible, including fee discounts, development incentives, tax incentives, rebates and installation financing, and stormwater regulation incentives.



Incentive Framework

Goal of Incentive	Mechanism for Fee Reduction	Process for Implementation
Reduce Imperviousness	•Percent fee reduction •Per-square-foot credit	•Percent reduction in imperviousness •Square feet of pervious surfaces
On-site Management	•Percent fee reduction •Quantity/Quality credits (performance-based)	•List of practices with various credits •Total area (square feet) managed
Volume Reduction	•Percent fee reduction •Performance-based quantity reduction	•Percent reduction in imperviousness •Performance-based •Total area (square feet) managed •Practices based on pre-assigned performance values
Use of Specific Practices	•Percent fee reduction •One time credit	List of practices with various credits

Slide courtesy of Abby Hall, US EPA

After Neil's luncheon presentation, the floor was open to discussion and questions related to LID and the work of the LID Center. Neil was asked to expand upon the Southern California Regional LID Manual, specifically, what were the key issues implementing LID in an arid environment? Neil responded that it was the unique water cycle. Storm types are different from elsewhere in the country. Analyzing the hydrology correctly was a challenge. Recognizing site elements and how they interrelate were essential to determining design volumes and sizing IMPs. The plant palettes were also unique. It was important to select local plants appropriate for the soil types.

Neil was then asked about management of LID after installation. Is the LID Center looking at maintenance

issues? In response, he said the primary LID-related fear is who will maintain it. Most systems still function when maintained by the homeowner. The key is working to train the people who have these facilities. Information on inspection procedures is needed.

A member of the American Society of Civil Engineers (ASCE) wanted to know when a model code for LID would be developed. Neil stated that he didn't think a model code was possible, because every community has a different way of regulating. Instead, the LID Center approach is to ask questions and have interdepartmental discussions to seek answers for a community. The Center wants to know what practices are functioning and how they are functioning. The Center also looks at developments within the community. It is very complex and requires consideration of all elements. The danger in a model code is that administration and implementation varies from community to community.

A participant stated that drainage design in the Las Cruces area is not just based on peak flow rate, but also on volume control. However, volume control is time dependent. In his opinion, the time element is not managed well on a cumulative, watershed-basis in the Las Cruces area. Neil concurred that timing is key when applying LID over a watershed. It is easier to focus on specific areas for adding layers of distributed controls.

Neil was then asked for information about the LID Center and the ways local communities can utilize it. The LID Center was initially started as a non-profit to investigate LID concepts. It has grown and done other things, such as being a modeling partner for universities and research organizations. The LID Center assists developers and communities with adapting LID to different locations. The LID Center is basically a research center. They would love to work in the Las Cruces region.

The discussion turned to a local project that was designed to capture the 5-year storm event. An issue with it has been the long-term monitoring. Neil concurred that this is a problem and is not cheap. One solution has been to hire students to monitor a project's effectiveness for one to two years after installation. An ongoing issue is the difficulty in translating data from a variety installations and site conditions into meaningful conclusions and guidance. The stormwater business is spending tons of money on installing stormwater management practices, but virtually no money to research their effectiveness. Better monitoring programs are needed.

Session 3A

Retrofitting Existing Development with Green Infrastructure

Tom Schuster, AICP
City of Las Cruces

Susan Lowell
City of Las Cruces

Neil Weinstein, PE, RLA, AICP
Low Impact Development Center, Inc.

Biographical Information

Tom Schuster is the Sustainability Officer for the City of Las Cruces, where he is responsible for a wide range of initiatives related to reducing the City's ecological footprint, from renewable energy and efficiency, to sustainable and resilient land use and transportation planning, to public education and outreach. He has a BS in Environmental and Forest Biology from the State University of New York (SUNY ESF) and an MS in Energy and Environmental Policy from the University of Delaware. Previous experience includes work with the Las Cruces Metropolitan Planning Organization and as a long range planner with the City of Las Cruces.

Susan Lowell is a Long Range Planner with the City of Las Cruces and project lead for the 2009 EPA Smart Growth Implementation Assistance project on El Paseo. Susan arrives at city planning through serving the non-profit and for-profit sectors as a Program Associate for New Mexico MainStreet, Assistant Director of Las Cruces Downtown, project manager for Albuquerque's Façade Improvement Program, and Marketing Director for a landscape architectural & planning firm. Granted a Masters in Community and Regional Planning from UNM, Susan's focus then, as now, is bridging such unlikely topics as aesthetics and entropic landscapes with fresh perspectives in the spirit of collaboration.

Neil Weinstein is the Executive Director and one of the founders of the Low Impact Development (LID) Center, Inc. Formed in 1998, the LID Center is a non-profit organization that focuses on the research and implementation of innovative and sustainable infrastructure, stormwater, and water management strategies and techniques. Neil helped develop the original concepts and foundations of LID over 15 years ago. He has worked across the country helping communities to implement LID and Green Infrastructure. Recently, he worked with EPA and the Department of Defense on development of Section 438 of the Energy Independence and Security Act. Neil was one of the original signers of the Letter of Intent to develop Green Infrastructure with EPA and is currently the Co-Chair of the first national American Society of Civil Engineers conference on Green Highways and Green Streets.

Abstract

Through receipt of an EPA Smart Growth Implementation Assistance award, the City of Las Cruces has been collaborating with the EPA, HUD, and DOT to develop:

1. A revitalization vision for the El Paseo corridor, and
2. A public input model to be used in future planning efforts.

After a brief overview of the El Paseo corridor project, participants are asked to utilize their knowledge of GI in a group exercise to generate ideas for potential GI retrofit projects appropriate to the El Paseo corridor and the Las Cruces area overall. Participants discuss the benefits and challenges of the various options and share ideas generated with the whole group. This information will be synthesized and used to inform later public input sessions related to the El Paseo corridor project.

Presentation Summary and Discussion

The El Paseo project starts at the intersection of Alameda Blvd and Lohman Ave and follows Alameda Blvd southward until it becomes El Paseo Rd. The project continues along El Paseo Rd to University Ave and New Mexico State University. There is a great diversity of residents in the area, including NMSU students, long time home owners, and senior citizens in special care facilities.

A major goal of the project is to improve livability and mobility without impacting affordability. Walkability is a key issue, since residents in the project area have lower than average vehicle ownership rates. Improving stormwater drainage in the area is another issue. The existing drainage needs improvement, and parts of the corridor are in the flood plain. The goal is to capture the first inch of rainfall; however, there are many space constraints with existing structures and utilities. Las Cruces High School is within the project area. There is interest in using the El Paseo project for environmental education.

Participants were separated into groups at six tables. Each table was given a portion of the project area to discuss and then present their ideas to the entire group. Three tables (1, 5, and 6) were assigned the area around the K-Mart at 1240 S. El Paseo Rd.

Table 1: K-Mart Area. The group discussed ways to improve walkability. They identified several concerns to be addressed: pedestrians interacting with the street and vehicles; lack of walkways; and a need for safe crossing locations. Design features needed to make the area walkable are: shade; safety; pleasing aesthetics; landscaping and plantings to reduce heat islands; and ADA accessibility.

Potential solutions identified by the group are:

- Install pedestrian signage and crossing points at Idaho Ave.
- Reinforce implied connectivity.
- Construct a plaza on Idaho Ave, south of the K-Mart.
- Construct a park-like, green node as a gathering place and collection point.
- Design ways to slow traffic on El Paseo Road.
- Widen El Paseo road to add a median, and install greenery and visual interest along the road.
- Create nodes of activity with buffers between the road and parking lot.
- Reduce the amount of asphalt; e.g. create an undulating edge, with green space to filter runoff.
- Install a pedestrian link through the median.
- Construct a roundabout at Idaho and El Paseo Rd; in the process, move pedestrians further away from intersection.

Table 6: K-Mart Area. This group reported that many of their ideas were similar to those of Table 1. They asked about a soils analysis, saying that designs should be careful about using infiltration features. Other potential solutions identified by Table 6 are:

- Install landscaping along the roadway and entrance.
- Add mixed use development on the outlying parcels, something like commercial on the ground floor and loft apartments on upper floors.
- Modify the median to provide stormwater retention.
- Install permeable paving.
- Install a linear planter in front of the store.
- Add cisterns to capture roof runoff.
- Design infrastructure to capture runoff on the vacant lot, south side of the K-Mart, near Idaho Avenue.

Table 5: K-Mart Area. This group added that the site had a lot of redevelopment potential on the north and south sides. The lot on the south side could be mixed use development. A bioswale could be added to manage stormwater runoff. The runoff from the existing building could be directed to the back of the lot or to underground storage.

Tables 2 and 4 looked at the area around Las Cruces High School, with Table 4 presenting their ideas first.

Table 4: Las Cruces High School Area. An important goal for this area is to provide educational opportunities with the project. The ideas include:

- Install a pilot project of a bioswale and trees.
- Construct a dry pond near the track.
- Create a trail for PE classes.
- Improve the functioning of the existing stormwater pond and add cisterns to the site.
- Create an open courtyard that will dissipate heat.
- Do a green roof experiment using the science labs for testing and evaluation.
- Plant vegetation to reduce heat.
- Construct a bioswale on the west side.
- Install curb cuts along El Paseo to harvest stormwater runoff and increase green plantings in front of the school.
- Get the students involved in the design/engineering.
- Use horticulture classes to assist with soil analysis and moisture measurements.

Table 2: Las Cruces High School Area. This group added their ideas, with the caveat that money was no object while brain-storming ideas. Potential solutions are:

- Capture the first inch of stormwater on-site.
- Focus on the parking and its connectivity to the surrounding residential areas.
- Install medians with bioretention in El Paseo Rd.
- Reconfigure the existing lot to integrate bioretention into vegetated areas.
- Add shade trees with infrastructure to capture and use runoff for watering.
- Depress the football field, which could decrease the irrigation demand.
- Add stormwater storage, such as underground storage of runoff from rooftops or parking lots.

One table was assigned the Cervantes area.

Table 3: Cervantes Area. The major problems in this area are drainage and the need for sidewalks and a pedestrian corridor. They suggested that stormwater runoff could be managed with walkable features, such as rolled curbs, pervious pavement, and vegetation around the perimeter. It may also be possible to relocate buildings in the design for this vacant lot, and to redesign flow patterns.

The wrap-up discussion included issues and challenges for the entire project area. Retrofitting existing infrastructure is always difficult. The topography, site constraints, and needed drainage improvements will increase the cost of development in the project area. However, retrofits can work. LEED credits are available for retrofits on existing sites. Involving high school students in some of the work could help with the costs. Two additional ideas for water harvesting were mentioned: collecting condensate runoff from air conditioners and using grey water from the high school.

Session 3B

GI and LID in Semi-Arid Environments: The Albuquerque Experience

J. Steven Glass
Bernalillo County Public Works

Biographical Information

Steven Glass earned a MS in Biology from New Mexico State University in 1976. After graduation, Steven held environmental virology research positions in California, North Carolina and New Mexico. Beginning in 1989, Steven was Program Manager with the Albuquerque-Bernalillo County Water Utility Authority, overseeing programs in compliance, laboratory, biosolids composting, and constructed wetlands. In 2009, Steven joined Bernalillo County as Water Resources Planner managing the NPDES Phase II storm water program. Steven represents local governments on the NM Water Quality Control Commission and serves on the Board of Ciudad Soil and Water Conservation District.

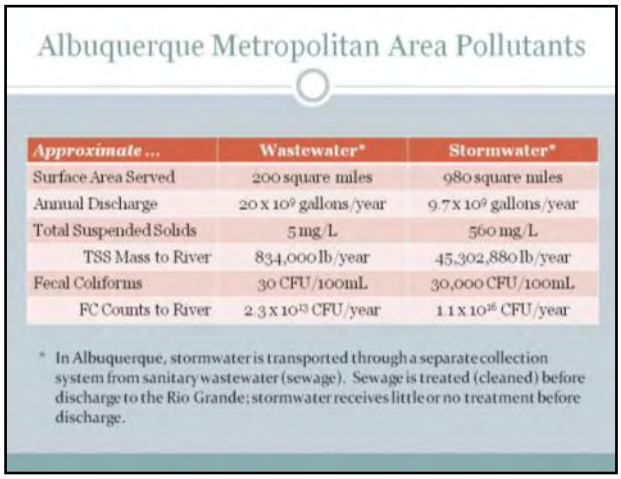
Abstract

Several urbanized areas in the Albuquerque, NM metropolitan area are subject to permitting under Phase I or Phase II of the NPDES storm water regulations. NPDES permits are issued in New Mexico by EPA Region 6 in Dallas, TX. Following the national example, EPA Region 6 has established an emphasis on LID/GI to improve compliance with the expectations and requirements of NPDES storm water permits. In August 2009, a local experts' focus group convened in Albuquerque and established that many LID/GI techniques are problematic in the semi-arid environment of the southwest. In response, a workshop was held in March 2010 to examine ways to address and overcome real and perceived obstacles to LID/GI implementation in Albuquerque's semi-arid environment. This presents the outcomes of the August 2009 focus group and March 2010 Albuquerque workshop, and future directions for LID/GI implementation in the Albuquerque metropolitan area.

This presentation is available for download by clicking here.

Presentation Summary and Discussion

The Rio Grande through Albuquerque is impaired due to bacteria, and the EPA has approved a Total Maximum Daily Load (TMDL) for it. The TMDL establishes the maximum pollutant load the river can absorb daily without exceeding Water Quality Standards. Results of water monitoring show that untreated stormwater is a greater contributor to bacterial loads on the Rio Grande than treated wastewater discharges.



Approximate ...	Wastewater*	Stormwater*
Surface Area Served	200 square miles	980 square miles
Annual Discharge	20×10^9 gallons/year	9.7×10^9 gallons/year
Total Suspended Solids	5 mg/L	560 mg/L
TSS Mass to River	834,000 lb/year	45,302,880 lb/year
Fecal Coliforms	30 CFU/100mL	30,000 CFU/100mL
FC Counts to River	2.3×10^{13} CFU/year	1.1×10^{16} CFU/year

In 2004 a genotype, bacterial source tracking study was performed to identify biological sources of fecal coliform bacteria in the river. Approximately 53% was found to originate from sources that can be controlled: canine (22%); livestock (13%); feline (2%); and human (16%).

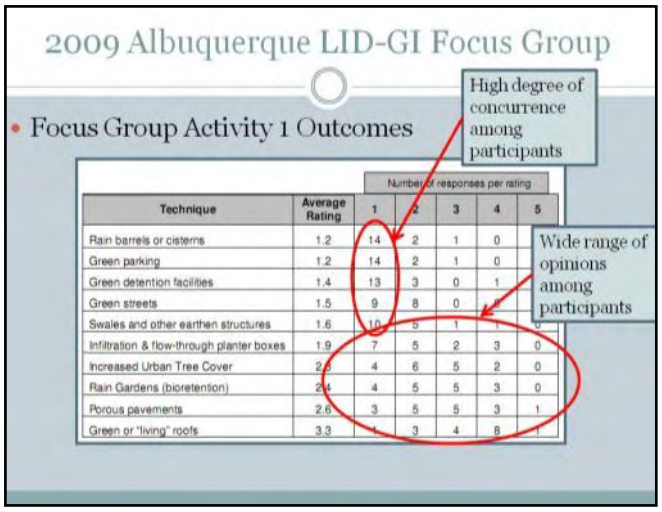
A Watershed Restoration Action Strategy (WRAS) was developed in response to the bacteria issue. Many of the WRAS objectives recommended LID/GI approaches. However, the perception in the Albuquerque area seemed to be that LID/GI was less prevalent in the arid southwest than in other areas, because it would not work in arid climates. Stormwater is still being managed by designing a drainage system to convey the water to the Rio Grande as quickly as possible.

In 2009 KT LaBadie, a Masters student at the University of New Mexico, explored real and perceived obstacles to LID/GI in arid environments for her MS Project in the UNM Water Resources Program. She used a focus group to study why LID/GI techniques weren't more prevalent in the Albuquerque area. The focus group included

representatives from the public sector, private consultants, and contract builders. GI techniques were divided into ten categories:

- Increased urban tree cover
- Green or "living" roofs
- Rain barrels and cisterns
- Infiltration or flow-through planter boxes
- Rain gardens (bioretention)
- Swales and other earthen structures
- Green parking
- Porous pavements
- Green streets
- Green detention facilities

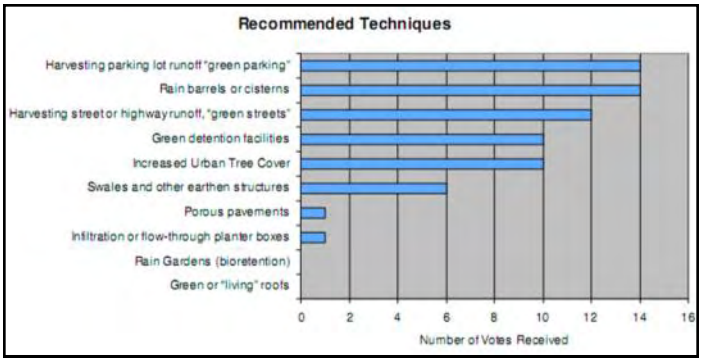
Members of the focus group first rated the techniques based on how well they believed the technique would perform in an arid region, with 1 being well and 5 being not well.



Technique	Average Rating	1	2	3	4	5
Rain barrels or cisterns	1.2	14	2	1	0	
Green parking	1.2	14	2	1	0	
Green detention facilities	1.4	13	3	0	1	
Green streets	1.5	9	8	0	[illegible]	
Swales and other earthen structures	1.6	10	5	1	[illegible]	0
Infiltration & flow-through planter boxes	1.9	7	5	2	3	0
Increased Urban Tree Cover	2.3	4	6	5	2	0
Rain Gardens (bioretention)	2.4	4	5	5	3	0
Porous pavements	2.6	3	5	5	3	1
Green or "living" roofs	3.3	[illegible]	3	4	8	[illegible]

The focus group members were then asked to select the four LID/GI techniques they believed were most applicable to arid regions. The highest rated techniques were ones perceived to be simple, well known, lower cost, and/or supportive of water conservation. The focus group also identified perceived barriers to LID/GI in Albuquerque. The barriers fell into four categories:

- Institutional (State Engineer policy, old manuals)
- Financial (lack of cost-benefit analyses, budgets)
- Social (residents disconnected from environment)
- Knowledge (lack of local examples)



To address the barriers, an Arid LID/GI Workshop was held on March 23-24, 2010. The workshop included panel discussions with national, regional, state, and local perspectives. Roundtable discussions were used to identify needs to be addressed if LID/GI is going to be implemented in Albuquerque. The workshop is envisioned as an annual event. Presentations from the workshops and other arid LID information are available at: www.aridLID.org.

When asked if the Middle Rio Grande Conservancy was involved, Steve Glass said they were involved in the WRAS. In response to a question about the source of human waste, Steve listed: malfunctioning septic systems, culverts occupied by the homeless, baby diapers, and bootleg waste haulers. A participant wondered if the same sources/problems could be present in the Las Cruces area. Steve said it was possible, since both areas have the same transport mechanism for bacteria, which is sediment.

At the end of the presentation, someone pondered what the future may hold for the Albuquerque area. Steve responded that watershed-based permitting will drive change in the future. EPA is committed to change, but changing the local entities relationships will be tough. Steve was asked about the role of public input and outreach. Steve concurred and indicated that part of the efforts to change will be outreach. Sometimes, there is a need for professional facilitators. When questioned about funding, he responded that watershed based plans improve the potential to receive funding from the EPA.

Session 3B

Stormwater as Part of an Integrated Site Solution: A Case Study of the Hahn Arroyo, Albuquerque, NM`

George Radnovich, ASLA
Sites Southwest LLC

Biographical Information

George Radnovich is a Founding Principal of Sites Southwest, a leader in the newly emerging field of Integrated Sites: the planning, design and management of complex ecosystems that create healthy communities. George has developed an approach to land and landscape design which stems from ecology and integrates into the built environment. He is best known for his efforts to create a more regional approach to the site and landscape through water conservation, Xeriscape, and green building. George co-founded the NM Xeriscape Council in 1987 and the Green Alliance of NM (now USGBCNM) and has promoted environmentally appropriate design throughout his career.

Abstract

In the arid southwest, arroyos and flood waters are generally viewed as a problem to be dealt with, as opposed to an opportunity for reconnecting people to the floodway's role in the environment and the reuse of stormwater. The Hahn Arroyo is an older metropolitan stormwater facility in Albuquerque's northeast heights. It slices through neighborhoods, commercial zones, schools, parks, and arterials as it travels from east to west, towards the Rio Grande. The channel has needed improvements for many years. It has deteriorated and failed in large storm events. A "Whole Systems Approach" has been used to rehabilitate the channel and adjacent land. The resulting project is one of the first of its kind in the country, in that it will reconstruct the arroyo channel as a large water cleansing and water harvesting device, while also providing a linear park, shade, wildlife habitat and visual relief. It is hoped the project will be a new model for sustainable stormwater conveyance.

This presentation is available for download by clicking here.

Presentation Summary and Discussion

Storm events in the arid southwest result in flash flood events in arroyos that are normally dry. The flood events have long been treated as a problem impeding development, which is best solved by engineering a channel to convey the water out of the developed area as quickly as possible. This drainage model was used as Albuquerque grew. Arroyos were straightened and lined with concrete, while floodplains were narrowed to fit into a street grid.

As the environment has become more important to people, the old way of designing channels is losing favor. The change in thinking is being aided by EPA standards that now require communities to address water quality, not just quantity control. In addition, water conservation is becoming a bigger issue as the southwest struggles to maintain a sustainable water supply.

All of the concerns related to channel design are best addressed by a "Whole Systems Approach." Concepts key to this approach include:

- Integrating land use and infrastructure
- Providing linkages so public lands are accessible
- Designing dual use facilities
- Educating the public about stormwater facilities
- Making public lands amenable to wildlife
- Conserving water

The Hahn Arroyo Project was developed as an example of the "Whole Systems Approach."

The Hahn Arroyo was straightened over 50 years ago during development of surrounding neighborhoods. The arroyo was then lined with concrete in response to damages from a 1963 flood event. Since then, the concrete lining has deteriorated and been damaged by turbulent runoff laden with debris and sediment.

Since rehabilitation of the channel was necessary, the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA), the channel's owner, asked the consultant team to use design concepts that would result in a "Whole Systems Approach" to the rehabilitation project. The concepts incorporated into the project include:

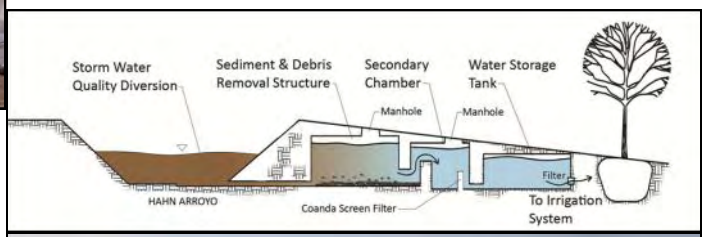
- Landscape protection
- Natural stormwater systems as a model
- Recreation/linear parks
- Water harvesting and cisterns (LID)
- Permeable pavements and structural soils
- Stormwater quality devices (LID)
- Linkages for public access

The presentation attendees expressed great interest in the project and asked many questions, and the responses were as follows.

The total length of the project will be 1.5 miles, and the bottom of the arroyo will remain concrete. Trails on the north side of the arroyo will be decomposed quartz, while trails on the south side will be asphalt. Over the length of the project, there is an elevation drop of about 40 feet. In places, there will be drops in the bottom of the arroyo. Constraints prevent mimicking the natural arroyo. It was not possible to do much more than add meanders to the arroyo.

The project is funded in it's entirety by the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) . The City owns the land, and AMAFCA built and owns the channel. AMAFCA's approach to older channels will be to redevelop with concrete while the treatment of channels that are developed in the future will be soft-armored. After the project, maintenance costs of the channel itself are expected to decrease, while the cost of maintaining the amenities on the edges will be higher.

Finally, a question was raised as to whether safety was a concern with people recreating close to an arroyo. The issue is one of education, and children need to be taught about how to safely use the amenities. Overall, it is believed that the benefits outweigh any possible risk.



Session 3C

GI-GIS: Talking Data and GIS Analysis for Green Infrastructure (GI) Planning

Ian S. Hanou
AMEC Earth & Environmental, Inc.

Biographical Information

Ian Hanou has ten years of experience in the geospatial industry focusing primarily on innovative solutions in forestry, planning, natural resources, agriculture, energy, and water resources. His work experience ranges from technical GIS & remote sensing analysis to customer service and marketing, including direct sales with federal, state, and local government agencies, utilities, private firms, non-profits and universities. He has presented at numerous conferences and has published on topics involving urban forestry, green infrastructure, and geospatial analysis. Ian is proficient in spatial data analysis software, decision support systems, data acquisition and processing, and project management relating to studies in watershed health, urban natural resource management, water supply and conservation, and land use planning.

Abstract

The term "GI-GIS" may not catch on as a standard, but it defines where geospatial technologies integrate with green infrastructure planning. This presentation provides examples of GIS and remote sensing data availability and analyses for municipal projects in the southwest U.S. involving water conservation, urban forestry, stormwater, and planning. Existing GIS sources and detailed land cover data are increasingly used to profile development and land use patterns and to establish baseline conditions of tree cover, impervious surfaces, and irrigated turf grass for modeling and planning. Regardless of the name, "GI-GIS" should be on your radar.

This presentation is available for download by clicking here.

Presentation Summary and Discussion

People are aware of the fact that GIS is a lot more than making maps, but not everyone is aware of all the capabilities of GIS, particularly for green infrastructure. The first step toward using GIS for GI is to incorporate as many layers of data as possible, such as aerial images, land use, and planimetric/cadastral data, which could be useful for GI analysis. This type of data shows impervious surfaces, building footprints, parcels, and other important information.

GIS data comes from many sources. Vegetation analysis uses photo interpretation of the near infrared band to identify vegetation. Its spectral quality is called a natural or true color versus a false color composite. Light Detection and Ranging (LIDAR) technology uses a sensor on an airplane to provide digital elevation information and a three dimensional representation of the lay of the land. GPS applications can gather data in the field while doing infrastructure inventories or other field work. The applications are easy to use and very useful for a city.

CommunityViz (www.communityviz.com) is GIS software designed to visualize, analyze, and communicate land-use options for planning and public participation. The software updates scenarios automatically as new data is entered. AMEC has used CommunityViz to help cities plant trees by showing the visual impact of different planting options for a development.

The Trust for Public Land's GreenPrinting application uses a multi-criteria approach to make decisions about land conservation priorities. The application evaluates the "best available" data and identifies the highest conservation benefit for an area, such as water quality, park equity, or wildlife protection. The information is then used to prioritize land conservation decisions.

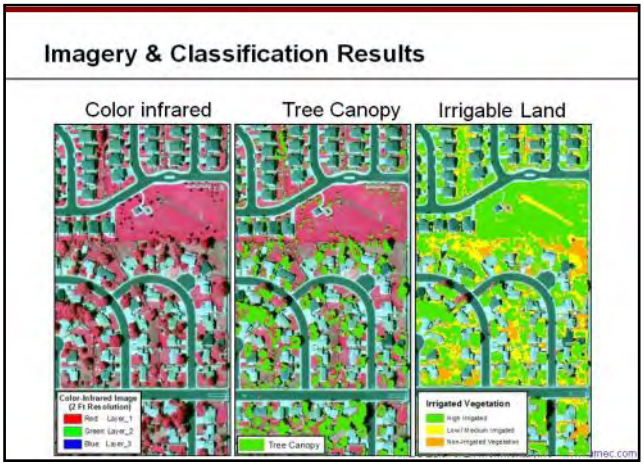
The US Forest Service (USFS) is supporting a GIS application referred to as Urban Tree Canopy (UTC) Analysis. It identifies existing and possible tree cover in an urban area to support goal-setting for urban tree canopy. It can also identify areas that may have issues inhibiting tree planting or growth. With the GIS application, a city can develop targets and create performance measures to increase urban canopy cover. When asked by a conference attendee about an ideal target for canopy cover, Ian said it depends on the project's costs and goals. Organizations like American Forests have recommendations, but it depends on the region and the type of trees suitable for the area.

The Texas Tree Foundation and AMEC have developed a GIS application to evaluate canopy cover. Their application was used in Dallas, TX to identify all potential planting points and assign priorities to the points. Data is associated with each point to help make planting decisions. The data can be queried for things such as points near a parking lot or a stream. The application includes heat island effect imagery that compares the sites to heat island grid cells.

The GIS parcel-level land cover metrics can be applied to many water-related uses. Castle Rock Utilities, CO used it to develop a water budget rate structure. Aurora, CO looked at percent impervious surface. Thornton, CO and AMEC did an irrigable area analysis to estimate water use and irrigation demands for planning future water needs.

Modeling software is available for a variety of GIS applications. Examples include:

- USFS's CITYgreen and i-Tree models for analyzing the benefits of tree canopies.
- EPA's SWMM-5 model to evaluate stormwater runoff reduction by infiltration, evaporation, transpiration, leaf interception, and beneficial reuse.
- EPA's SUSTAIN model facilitates selection and placement of BMPs and LID techniques.



When asked if the software is proprietary, Ian said he doesn't think any of them are. Some are free. The cost is in obtaining the data and parameters needed to run the models. A self-described community activist stated that ArcGIS is expensive for the public and asked about open source software that can add data layers to Google Map. Ian replied that Google Earth has a free version. Their pro version is about $400. Earlier in the presentation, Ian commented that GeoPDF was a valuable tool for converting GIS images to a pdf document for presentations and public distribution. At this point, he was asked about the cost and availability of GeoPDF. Ian said it's an extension of ArcGIS for about $3,000, but ArcGIS now has the capability to export map layouts in a similar "interactive" PDF format. An additional option is ArcExplorer, a free, light GIS software version from ESRI.

Session 4A

Panel Discussion: GI/LID and Local Government

Jeff Mann, Parametrix
Loretta Reyes, PE, City of Las Cruces
Peter Bennett, CFM, City of Las Cruces
Robert Armijo, PE, Doña Ana County
Kareem Dallo, PE, CFM, City of El Paso

Biographical Information

Jeff Mann of Parametrix has broad-based planning experience through his 31 years of involvement on a wide range of land use planning and public involvement projects. His experience has involved comprehensive land use planning, master plan development, infrastructure master plans, and environmental analysis. He has processed projects in jurisdictions which were developing Low Impact Development standards and has worked through the tradeoffs and engineering adjustments needed to accommodate green infrastructure in the engineering review process. Jeff recently has been involved in the public involvement and environmental documentation for several road development projects for the New Mexico Department of Transportation. He has a Master of Environmental Administration from the University of California Riverside and a B.S. in Environmental Studies from the University of California, Santa Barbara.

Loretta Reyes is the Engineering Services Administrator for the City of Las Cruces, Public Works Department. Loretta has been with the City for 16 years and has managed the Engineering Services section for the past nine years. Her duties are to ensure that development meets the City of Las Cruces Design Standards and to ensure the proper administration of the City of Las Cruces National Flood Insurance Program, Community Rating System Program, and the City of Las Cruces Storm Water Management Program. Additionally, Loretta administers the development, management, and maintenance of City codes, design standards, specifications, and technical/ engineering services agreements, including development and management of various engineering projects. Prior to her tenure at the City, Loretta worked at the Los Angeles Department of Water and Power for seven years, where she managed the transportation of hazardous wastes and materials, coordinated hazardous waste minimization programs, planned and scoped major water utility projects, and designed water trunk lines. Loretta holds a Bachelor of Science degree in Civil Engineering from New Mexico State University.

Peter Bennett is a Senior Engineering Technician for the City of Las Cruces, Public Works Department, in the Engineering Services section. Peter has managed the City of Las Cruces Stormwater National Pollutant Discharge Elimination System (NPDES), Phase II General Permit for over three years and is a Certified Floodplain Manager with the State of New Mexico. Peter is also an executive committee member for the Paso del Norte Watershed Council, which is part of the 319(h) Nonpoint Source Grant involving various stakeholders within the stretch of the lower Rio Grande watershed. Peter is a graduate of New Mexico State University.

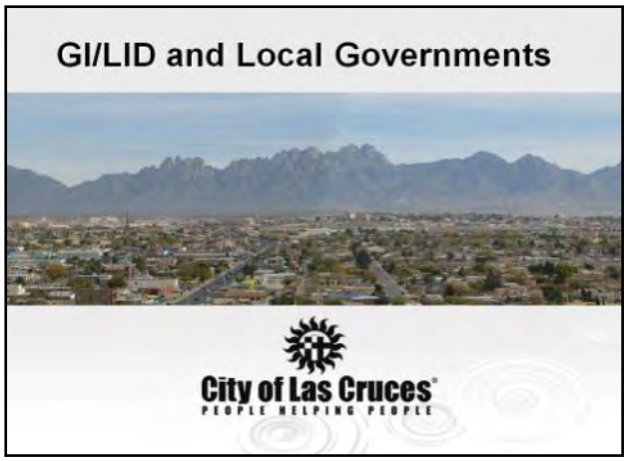
Robert Armijo is currently serving as the County Engineer for Doña Ana County, a position he has held for almost eight years. His duties include administration and management of the Surveying, Design, Construction, Inspection, Compliance Review, and Storm Water Management sections of the Doña Ana County Engineering Department. Robert is a New Mexico State University graduate with over 14 years in the civil engineering field in both the private and local government sectors.

Kareem Dallo is the Engineering Division Manager for the City of El Paso, a position he has held since 2005. His duties are to insure the safety and the welfare of the public in the development of existing and proposed infrastructure by enforcing appropriate City Code, Ordinances, Design Standards, Building Code, and Environmental and Safety Regulations, as well as administer the FEMA Flood Plain and Storm Water Management Program. He has bachelors and masters degrees in civil engineering from UTEP and a bachelor in business administration from American University of Beirut. He has over 25 years experience in the civil engineering field.

Abstract

The goal of this session is to have an informal discussion regarding the establishment of green infrastructure/low impact development design standards, as well as identify incentives and challenges for local governments. The session is intended to:

- Discuss basic principles of LID and GI design.
- Discover what mechanisms and incentives are needed in order to successfully implement GI and LID practices.
- Discuss what possible additional information will be required from developers/engineers in order to support engineering review of green infrastructure elements.
- Show local examples of sites around the City of Las Cruces, Dona Ana County, and City of El Paso that have used some components of green infrastructure.
- Find out what other cities have done to implement and promote green infrastructure in their communities.
- Discuss what political obstacles are involved in establishing green infrastructure design standards and incentives for municipalities.
- Review local project examples which highlight the changes needed in Development Standards in order to accommodate GI/LID, including the storm water calculation adjustments that will be needed in storm system sizing to factor in rain gardens and other onsite infiltration.



Presentation Summary and Discussion

The session began with each member of the panel giving a brief presentation of their experience with GI/LID.

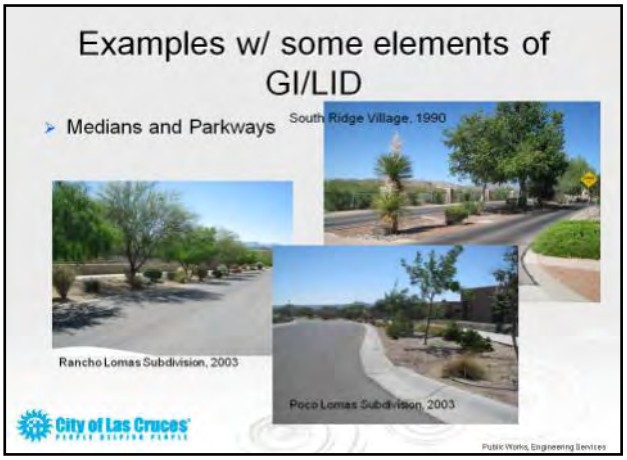
Jeff Mann, Parametrix, stated that in the northwest United States, the lack of GI/LID regulations was the main problem they had to overcome when implementing LID. An LID design must be accepted by the reviewing city to be implemented, but a timely review is difficult if there are no design criteria upon which to base the review. Jeff shared a few issues that a developer and city encounter when there are no design criteria for LID.

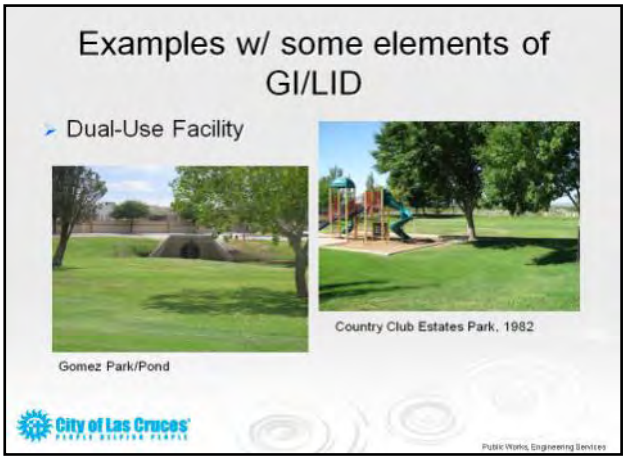
- How is LID factored into drainage calculations? There are no savings in infrastructure if the drainage design has to be the same as if no LID is implemented.
- What are the requirements for site analysis to determine the feasibility of infiltration for the site's soil type? Composition of the soils is critical to LID.
- How are the load-bearing and maintenance requirements of pervious pavement addressed?

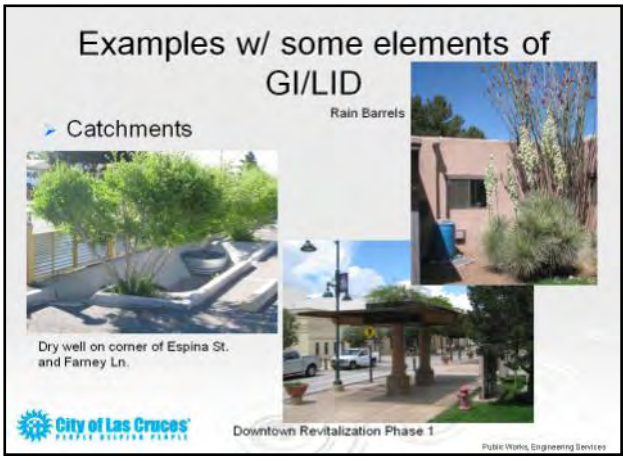
Loretta Reyes, City of Las Cruces, shared the Public Works Department's experience with GI/LID. The City's current minimum design standards do not specifically address GI/LID. City of Las Cruces Municipal Code Section 32-102(A)(3) allows developers to share storage in regional flood control ponds with dual use as parks. Loretta commented that the City needs to look at incorporating GI/LID concepts into the design standards. Without analysis, design standards, and working examples of GI/LID concepts in Las Cruces to prove that these new drainage concepts will work, it is difficult for the City to accept these systems as part of their operation and maintenance program. The Las Cruces Drainage Design Standards were last revised in 2005. The City is now looking at revisions to all sections of the design standards and evaluating how to incorporate LID concepts.

Peter Bennett, City of Las Cruces, stated that the City has a problem with sites that were left unstable when the last round of development ended abruptly due to the market collapse. LID needs to start with site management during construction. Contractors should minimize the amount of area disturbed at one time. They should also leave the site better than they found it.

Peter then showed a series of slides with examples GI elements that have been implemented in the City of Las Cruces.







Robert Armijo, Doña Ana County, said the County is implementing GI at the intersection of Picacho Hills and Picacho Avenue. The County is requiring LEED on all County projects and using LID criteria to rate projects for funding. Projects with higher ratings receive a higher funding priority. Robert added that the Las Cruces Metropolitan Planning Organization is allowing narrower roadways, which decrease imperviousness and can facilitate GI.

Kareem Dallo, City of El Paso, discussed how the 2006 storm event changed the view of storm water in El Paso. The City is focusing on preventing a reoccurrence. Park plans have been developed for the use of storm water, and subdivisions are now using park-ponds for storm water retention.

Engineers have approached the City of El Paso asking what the City wants done differently in development design. Currently, the City sets design criteria for development and provides design guidelines for satisfying the criteria. However, it is left to the engineer of record to design the development to meet the criteria. The engineer can either follow the City's design guidelines or propose an alternative design. Engineers can meet with City staff to discuss new design ideas. Many out-of-town engineers are taking advantage of this opportunity and bringing in new ideas.

The main issue in El Paso is controlling the volume of stormwater runoff. Within rights-of-way, the City is putting parkways in the middle of roadways with a swale to capture some of the volume. The City is also considering a proposal that properties be 3- to 4-inches below the curb line, with all landscaping recessed for storm water capture.

Streets should not be channels. The City of El Paso has velocity problems with flow in the streets on mountain sides. Stormwater needs to be intercepted and managed before it gets into the street.

Tom Schuster, City of Las Cruces, moderated a panel discussion following the presentations. He began by asking what experience do other local governments have

with GI/LID. Steve Glass, Bernalillo County, responded that the County uses a 0.25 cent environmental gross receipts tax.

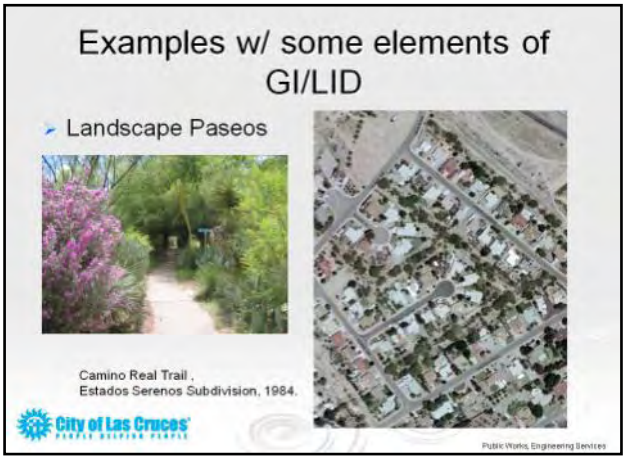
A conference participant stated that he thinks the City of Las Cruces needs guidelines for innovative development. He would like to see performance criteria. He shared that twenty years ago a developer tried a planned unit development with a master plan. It took a lot of effort to get it through the City.

Loretta Reyes responded that the City of Las Cruces has experienced maintenance problems with subdivisions where innovative designs haven't worked. Maintenance is an issue with LID features. Jeff Mann followed by saying the City has to be able to say that an LID design protects life and property to the same extent that a 100-yr pond will.

Another participant asked what the City of Las Cruces was doing to get people involved in GI/LID. Loretta Reyes said today's conference was a start. The City does not have GI/LID guidelines and is not sure how to handle a plan when a developer comes forward with an LID design. LID concepts may be proposed, but the design must still meet current design standards. Tom Schuster commented that LID design is in addition to everything else required for a development. Currently, there is no reduced cost for using LID concepts in the City of Las Cruces.

A participant then stated Doña Ana County is working on revisions of its design standards. They are looking to create incentives for LID with the revisions.

A question was asked about GI/LID education being written into the subdivision plan from a developer standpoint. In particular, homeowner associations (HOA) do not know the amount of resources they will need in 10 or 20 years for maintenance of a GI/LID feature. Someone cited the GI example presented by Peter Bennett of an existing subdivision and commented said the green space trails are being maintained only because the City sued the HOA for maintenance.



Someone responded with the LEED requirement for an operations packet. Could a similar requirement be adopted for the development process when an HOA will be involved? Robert Armijo said the subdivision cited no longer has an HOA. The trails are being maintained by a few volunteers.

Regarding incentives for GI/LID, Tom Schuster said it is difficult for the City of Las Cruces to further streamline the review process, particularly when reviewing new techniques. He suggested a stormwater utility be adopted to help implement GI/LID. In response to a request from Tom, Gonzalo Cedillos, El Paso Water Utilities, explained El Paso's process for establishing the stormwater utility and the role and importance of the City's master drainage plan. Jeff Mann commented that a number of jurisdictions have adopted a stormwater utility in recent years. El Paso's experience gives the region a starting point.

Session 4B

Skyscapes

Laurie Firor
Consensus Planning, Inc.

Biographical Information

Inspired by observations of countless barren rooftops passing beneath her during a cross-country flight over a decade ago, Laurie Firor pondered the concept of the rooftop as a neglected resource. Her nascent daydreams developed into a passion that led to extensive research, which eventually coalesced into her master's thesis and project entitled "Life in the Sky: A Roof Garden Study," as well as years of pursuing her dream of greening rooftops of any scale. Laurie is a Project Manager and Landscape Designer for Consensus Planning, Inc., the Southwest's leading consulting firm in planning, landscape architecture, and urban design. She received her BLA from the University of Georgia and her MLA from the University of New Mexico. She is a Past-President and current Member-at-Large of the New Mexico chapter of the American Society of Landscape Architects, as well as a member of the U.S. Green Building Council.

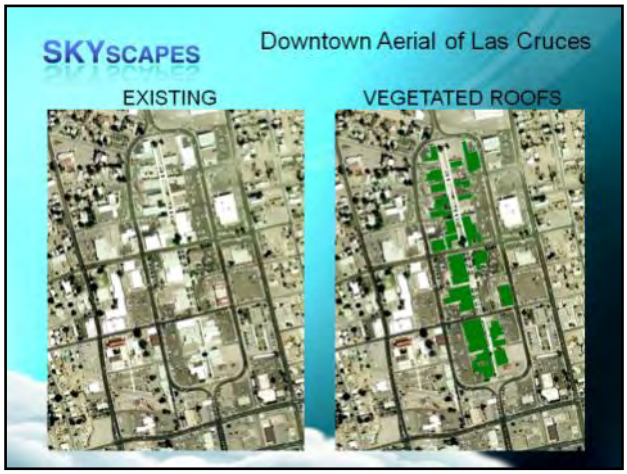
Abstract

Formalized roof gardens are believed to date their origins to around 600 BC when King Nebuchadnezzar constructed the Hanging Gardens of Babylon, considered one of the "Seven Wonders of the Ancient World." Thousands of years of technology and design development followed. Today, minimal problems in green roof construction and maintenance are the result, yet numerous obstacles to their installation still exist. This session will examine some fundamental green roof concepts as well as explore the ecological, economical, and wellness values and hindrances of green roof applications.

This presentation is available for download by clicking here.

Presentation Summary and Discussion

Buildings create a significant amount of impervious area within a city. The effects of this impervious area can be reduced by installing green roofs using existing technologies.



Roof gardens are any planted open space, intended to provide human enjoyment or environmental enhancement, which is separated from the earth by a building or structure. There are two types: intensive and extensive.

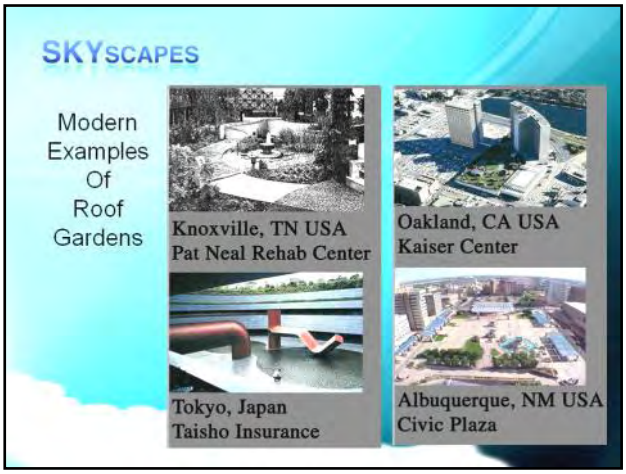
Intensive roof gardens are most common. They consist of container plantings on a rooftop and are generally intended for pedestrian use, dining, etc. The space is used and viewed by people as if it were on the ground surface.

Extensive roof gardens consist of a thin layer of vegetation on top of a conventional roof. They are generally entered only for maintenance. These roofs add insulation to a building and are part of the roof structure. They are only viewed by people in higher buildings, whose view is improved when looking down on the gardens.

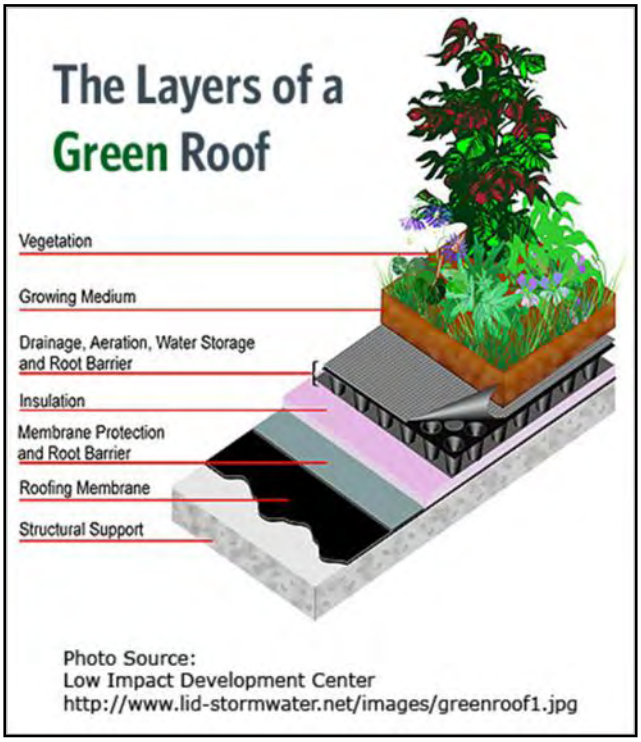
Roof gardens have been around for centuries. In the 19th century, sod roofs were common on settlers' houses and barns in the central and western United States. Vegetated roofs have also been used in Mexico and many European countries.

Despite this history, many people still have concerns about using roof gardens on modern buildings. The concerns include waterproofing, costs, structural integrity, and

viability in semi-arid and arid regions. Existing technologies can address these concerns, and modern roof gardens have proven feasible in many locations.



It's important to have a good structural engineer involved in the design of a roof garden. Roof gardens place additional loads on a building, which must be addressed in the design of new buildings. When adding a roof garden to an existing building, a structural analysis is necessary to ensure the building can bear the load of the garden and to determine if there are limits on the design of the garden.



A roof garden will add costs to the design and construction of a building. The cost of an intensive roof garden is $25 to $40 per square foot. For an extensive roof garden, the cost is $14 to $25 per square foot.

Aesthetic and other benefits offset the cost of roof gardens. The gardens regulate building roof temperatures, which decreases heating and cooling costs for the building. They also reduce the heat island effect in an urban area. Intensive green roofs add useable green space to a community. In some places, they are even used for vegetable gardening. Roof gardens also provide environmental benefits, such as urban habitat, biodiversity, and absorption of precipitation.

Germany is a leader in requiring green roofs and using incentives to encourage green roofs. They are ahead of other countries in number of green roofs, some of which have been in place for decades.

Session 4B

Green Roofs for Healthy Cities

Ed Soltero, AIA, NCARB, LEED-AP
University of Texas at El Paso

Joni Gutierrez, ASLA
Gutierrez Landscape Associates

Biographical Information

Ed Soltero is the Director of UTEP's Dept of Planning and Construction, which provides master planning, design, and project management services for all of the university's capital improvement projects. Prior to this position, Ed created and led the design team at Synthesis Architecture, an award winning firm in El Paso, TX. He received his undergraduate degree in architecture at the University of Houston, his MBA at UTEP, and his Master of Architecture at the New School of Architecture and Design. Ed has served on several Committees of the Texas Society of Architects, namely Design Awards, Codes and Standards, and Publications, and is currently a contributing editor to Texas Architect magazine.

Joni Gutierrez is the owner of Gutierrez Landscape Associates P.C., in Mesilla, NM. Her firm specializes in commercial and industrial Landscape Architecture and Irrigation Design suited to limited rainfall. Previously she worked for the City of Las Cruces, where she was responsible for creating the first river park on the Rio Grande in Las Cruces. She graduated from NMSU with a Bachelor of Science of Horticulture. She earned a Masters in Landscape Architecture from the University of Arizona. She has been a Licensed Landscape Architect in NM since 1986 and is a Licensed Irrigator in TX. She is a member of the Green Roofs for Healthy Cities (GRHC) Organization.

Abstract

This presentation briefly discusses different types of green roofs and provides a brief synopsis of their benefits. In addition, a case study of the new green roof at the University of Texas at El Paso is presented from the perspective of "lessons learned."

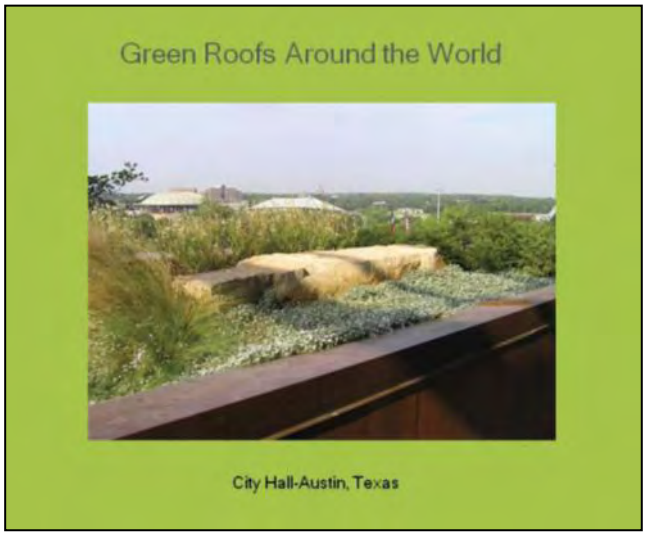
This presentation is available for download by clicking here.

Presentation Summary and Discussion

Green roofs are vegetated roof covers, with growing media and plants taking the place of bare membrane, gravel ballast, shingles, or tiles. Green roofs provide many economic, public/community, and sustainability benefits, yet there are several barriers that have resulted in a failure of the American market to adopt their use. The barriers are:

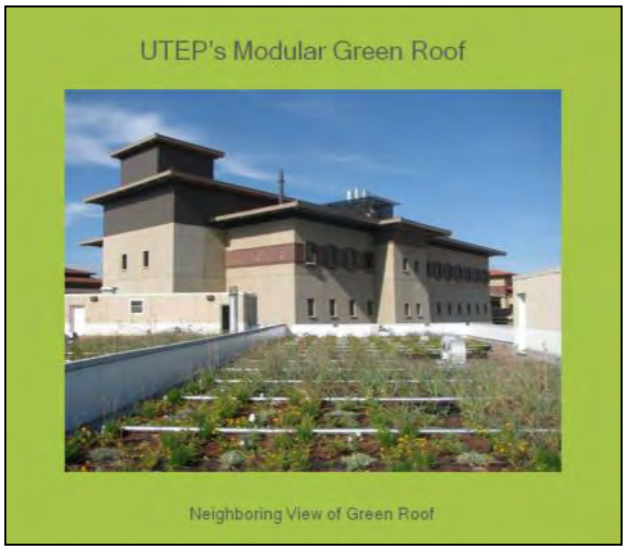
- Lack of knowledge and awareness among the development industry, municipal officials, and the general public.
- Lack of incentives to implement green roofs.
- Costs-based barriers due to lack of information about the full range of "traditional" and "public" costs and benefits and a market that doesn't recognize the value of the benefits.
- Technical issues and risks associated with the uncertainty caused by the lack of specialized products, few examples, and no industry technical standards, which means no building codes.

Green roof types consist of extensive roofs, semi-intensive roofs, and intensive roofs. Each type has its own design and maintenance requirements. Green roofs are being used around the world in places such as Vienna, Austria; the Schiphol Airport in the Netherlands; Vancouver, Canada; Fukouka, Japan; Berlin, Germany; and on the City Hall of Austin, Texas.



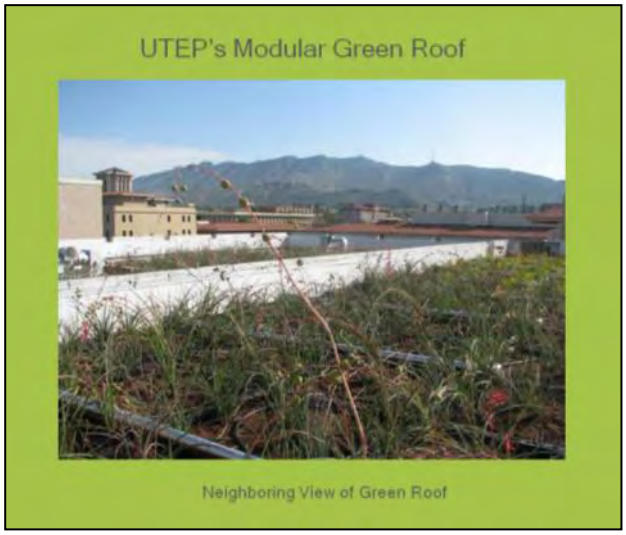
Ed Soltero and Joni Gutierrez worked together to design and install a green roof on the existing biology building on the UTEP campus. When he first proposed the roof, the reaction Ed received was one of concern about the risk if something went wrong. The roof was Joni's first green roof, so she researched literature on green roofs in order to prepare for the design.

A modular green roof system was chosen based on weight, cost, and other parameters. The soil media was engineered for weight characteristics and percolation. The minimum slope of the roof had to be a half inch per foot for drainage, so foam was used to alter the roof elevation and create the slope. Plants were chosen based on ability to survive the heat on the roof and also the color palette. The roof's performance is being monitored.



Lessons learned include:

- Retain the proper team.
- Create proper drainage slopes.
- Insist on constant monitoring of water-proofing membrane installation.
- Select plants carefully, considering heat resistance, freeze resistance, and irrigation compatibility.
- If using modular trays, scrutinize areas that can harbor birds, rodents, and other wildlife.
- Determine early the purpose of the roof.
- Be wary of concentrated loads.
- Get well organized for the installation.



Since this roof is the only known green roof in the immediate area, many people had questions. The first question was about the silver pipes in the photos. They are drip irrigation pipes. When asked which plant was not successful, Ed replied the New Gold Lantana. In response to a question about energy savings, Ed said data is being collected. The building's electric meter readings will be compared with the meter readings on a nearby building.

Several questions were asked about the soil. What was the soil depth? Is there a minimum? It was 4 inches due to load factors. What was the soil mix? How was it kept from drying out? UTEP maintains the soil. Lava rock is added each quarter. One participant asked if the design considerations included creating patterns. Yes, a strong orange pattern with textures was used.

When asked about how the green roof stands up to the wind, Ed said low profile plants were used. There have been no wind-related problems. The presenters were then asked if the typical flat roof home can support a green roof. The answer is no, the standard framing of a flat roof home cannot support a green roof. The home would need a truss joint system. A structural engineer should be involved from the start of the project.

The potential to use herbs and agricultural crops/grasses was discussed in response to a question about using an expanded plant palette. The last question was how long did it take to install the roof? It went in quickly in one week.

Session 4C

Stormwater Harvesting: Converting Nuisance Runoff into a Beneficial Resource While Saving Money

Van Clothier
Stream Dynamics, Inc.

Biographical Information

Van Clothier graduated from the University of California at San Diego in 1982 with a degree in physics. His firm, Stream Dynamics, Inc., specializes in turning runoff and erosion problems into water harvesting opportunities with water harvesting earth works, urban stormwater retrofits, and riparian restoration. Van has worked extensively in New Mexico and Arizona on a variety of restoration projects with regional drylands, stream restoration, and water harvesting experts, including Bill Zeedyk and Brad Lancaster. He has completed the River Restoration and Natural Channel Design stream restoration course schedule taught by Dr. Dave Rosgen. Van is the co-author with Bill Zeedyk of a book called *Let the Water Do the Work: Induced Meandering, an Evolving Method for Restoring Incised Channels*, published November 2009. Recent projects include designing water harvesting stormwater retrofits for the City of Santa Fe and restoring a very large ciénega (desert marsh) near the Mexican border.

Abstract

Understanding the dynamics of stormwater management is often obscured by fancy software modeling and over-engineered design. There is a disconnect between what people see when they look at a grassy swale and the stormwater management plans that quickly drain away any water as if it were not… water - our most valuable resource! Learn a holistic and intuitive approach which brings more cost effective, efficient, and beautiful results. This presentation demonstrates the basic principles for putting urban stormwater runoff to beneficial use for healthy communities in a way that is both economically and ecologically sustainable.

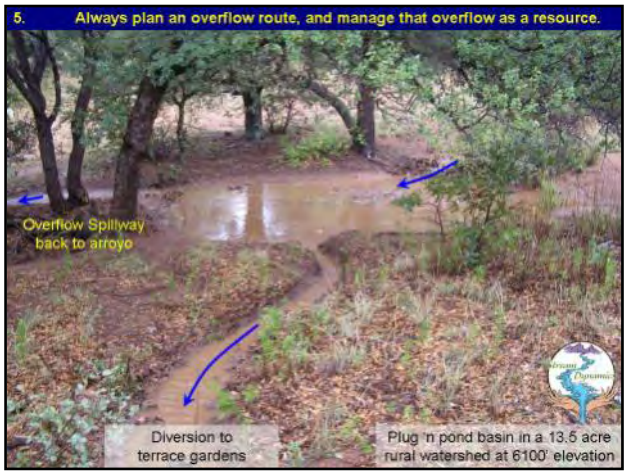
This presentation is available for download by clicking here.

Presentation Summary and Discussion

Van Clothier opened his presentation by describing how he has studied the processes shaping the arroyos flowing through his property in Silver City, NM. The deep gullies he observed looked wrong to him, like a scar on the landscape in need of healing. This realization caused Van to look for the causes of the problems, and then to seek methods for restoring the waterways, which he now does through his company, Stream Dynamics.

One significant cause of arroyo degradation is the increase in runoff that occurs when impervious surfaces are constructed. Water harvesting is a means to mitigate this increase. It converts nuisance runoff into a valuable resource. Brad Lancaster, an expert in drylands stream restoration and water harvesting, published a two volume, rainwater harvesting manual for drylands. He has eight water harvesting principles for drylands:

1. Begin with long and thoughtful observation.
2. Start at the highpoint of the watershed and work your way down.
3. Start small and simple.
4. Spread and infiltrate the flow of water.
5. Always plan an overflow route, and manage that overflow as a resource.
6. Maximize living and organic ground cover.
7. Maximize beneficial relationships and efficiency by "stacking functions."
8. Continually reassess the system: "the feedback loop."



Roads alter the natural flow of water and are another cause of arroyo degradation. They divert flow and create head-cuts, which travel upstream and turn an arroyo into an incised channel. Bill Zeedyk of the Quivira Coalition is an expert on stream restoration using induced meandering to restore arroyos.

Dr. Dave Rosgen created a channel classification system and teaches a series of classes on stream restoration using natural methods. The Quivira Coalition and Stream Dynamics are adapting these methods to the intermittent and ephemeral streams of New Mexico.

Earthworks Institute is a non-profit organization based in Santa Fe, NM. Their Climate Change Conservation Corps provides paid opportunities for young adults to obtain environmental knowledge and contribute to their community by working on stewardship projects. In the Santa Fe area, they have installed numerous drainage structures, under Van's direction, to manage and treat stormwater runoff from development before it enters Arroyo Chamisos. All work is by hand-labor using natural materials.

The drainage structures have a variety of functions. Some divert concentrated runoff into small basins to harvest water for restoration plantings in the floodplain. Other features, such as a rock structure called a Media Luna, spread and disperse concentrated runoff to prevent erosion and allow the water to infiltrate into the soil. A feature known as a Zuni Bowl is a rock structure that detains water in a steep gully, stopping a head-cut from migrating and allowing sediment to settle and water to infiltrate.

Van has co-authored with Bill Zeedyk a book entitled *Let the Water Do the Work: Induced Meandering, an Evolving Method for Restoring Incised Channels*. The restoration method described in the book has worked well to stabilize the channel and restore the habitat of intermittent arroyos.

Dear Colleagues,

Thank you for your interest in "Green Infrastructure in the Southwest: Challenges and Opportunities." We hope this summary report helps to raise awareness about the application of green principles to infrastructure and development projects.

We would like to thank Peter Bennett for providing the conference logo. In addition, we would like to thank Nancy Montoya with the City of Las Cruces Public Works Department and members of the Doña Ana County Master Gardeners for their valuable assistance in preparing for the conference. We would also like to acknowledge the efforts of Claude Morelli, Joni Newcomer and Melissa Gorham in securing continuing education credits for AICP and AIA.

We wish you all the best in your endeavors.

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Redevelopment Potential within the El Paseo Corridor Report

A Targeted Brownfield Assessment

by the Environmental Protection Agency (EPA) Region 6

06/07/2011 Draft

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Appendix A: Site Inventory Table
Appendix B: EDR DataSummary™ Corridor Study Report

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Figure 1-1: Study Area
Plate 1: Parcel Locations

1. Introduction

The Region 6 United States Environmental Protection Agency (EPA) tasked Environment International Government Ltd. (EIGov) and ICF International (ICF) with performing an area-wide assessment of the redevelopment potential of vacant and underutilized properties along the El Paseo Road business corridor on behalf of the City of Las Cruces (CLC), New Mexico, under Contract Number (No.) EP-W-07-096, Task Order No. 0010. The CLC is developing a revitalization strategy for the El Paseo Corridor (EPC), and the area-wide assessment is the first stage in developing that strategy.

This report was completed under the Targeted Brownfields Assessment (TBA) program. Brownfields are potentially contaminated sites that can offer economic improvement through enhanced use. Brownfields are often abandoned, idled, or under-used because expansion or redevelopment is complicated by real or perceived contamination. EPA's TBA program is designed to empower states, communities and other stakeholders to work together to produce environmental improvements, reduce risk to human health and, ultimately, reuse Brownfields sites.

The City of Las Cruces, New Mexico is located about 50 miles north of El Paso, Texas, in the southeast corner of New Mexico in Doña Ana County. The EPC is defined by a 1,000-foot buffer around the 1.75-mile corridor that begins in downtown Las Cruces at the intersection of Main Street and El Paseo Road and ends at New Mexico State University (NMSU) at the intersection of University Avenue and El Paseo Road, as shown on **Figure 1-1**. It is estimated that over 650 commercial, private, and residential properties are located within the EPC. The project area excludes properties and parcels located within NMSU campus boundaries as well as residential properties. From the list of 650 properties within the EPC, the CLC identified a total of 131 properties to evaluate for redevelopment potential. The 131 properties selected by the CLC for evaluation are highlighted in blue on **Figure 1-1**. Properties highlighted in light grey on Figure 1-1 are within the boundaries of the study area, but were not evaluated by EIGov-ICF for redevelopment potential.

The EIGov-ICF team obtained, compiled, and reviewed readily available information on the CLC-selected properties located within the EPC from existing sources such as the Doña Ana County Assessor's Office. At the direction of the EPA, an Environmental Data Resources (EDR) corridor report was obtained for a one-mile radius search around the EPC to help identify properties with potential environmental concerns. EIGov-ICF personnel visited each of the 131 CLC-selected properties within the EPC to observe and document the condition, status, current use, and any potential environmental problems associated with them. EIGov-ICF personnel also interviewed community members and business owners to obtain more information on the properties in the EPC. After gathering site information and completing the area visit, EIGov-ICF compiled the information into a Site Inventory Table to assist the EPA and CLC in identifying properties that warrant further investigation into issues that might hinder their redevelopment potential.

This report includes an introduction to the report (Section 1), descriptions of preliminary assessment activities (Section 2), preliminary assessment results (Section 3), and conclusions based on findings (Section 4).

2. Records Review & Field Activities

The EPC consists of over 650 commercial and residential properties; however, this study focused primarily on privately owned, commercial properties selected by the CLC. The objective of the study was to identify properties located within the EPC that are underutilized and underdeveloped. This assessment also involved evaluating properties that may have environmental issues that would complicate redevelopment efforts and make them eligible as Brownfields properties. A Brownfields site is defined, according to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as follows:

> The term "brownfield site" means real property, the expansion, redevelopment, or reuse of which may be complicated by the presence of potential presence of a hazardous substance, pollutant, or contaminant.

EIGov-ICF began the study by reviewing readily available records for the commercial properties identified by the CLC as properties of interest. The CLC identified a total of 131 properties within the EPC for EIGov-ICF to assess for redevelopment potential based on the properties being privately owned, non-residential, and potentially vacant.

EIGov-ICF gathered and reviewed property information and visited the area in order to populate a Site Inventory Table with the information requested by the CLC. The information requested for each property by the CLC included the following: tax assessor's parcel number, business name and type, address, ownership status, owner contact information, parcel area, on-site structures and size of each, construction date, building condition assessment, latitude and longitude, site status, tax status, possible former uses, zoning information, appraised land and improvements values, and general observations noted during the area visit. The Site Inventory Table, provided as **Appendix A**, was initially populated with data readily available from the Doña Ana County Assessor's Office. Additional information reviewed as part of the assessment included a corridor report from Environmental Data Resources (EDR) and Sanborn Maps. The review process is discussed in Section 2.1.

Data that were not available from the Doña Ana County Assessor's office were obtained during the site visits that took place between March 14, 2011, and March 17, 2011, and as part of interviews with community members. Section 2.2 discusses the field activities and interviews completed as part of this project.

2.1 Records Review

2.1.1 Doña Ana County Assessor's Office Records

A majority of the property information that the CLC requested for each property was available through the Doña Ana County Assessor's Office website[1]. The CLC provided EIGov-ICF with a list of 131 properties with tax assessor's parcel numbers that could be referenced using the Doña Ana County Assessor's Office geographical information system (GIS) database. Each property's parcel number was entered into the search engine, and information relevant to this project was entered into the Site

[1] http://gis.donaanacounty.org/advparcels/viewer.htm

Inventory Table. This information included business name; physical address; owner's contact information; parcel size; on-site structures, size, and appraised value; assessed value of the land; zoning information; and tax status. The Site Inventory Table is provided as **Appendix A**.

2.1.2 Environmental Data Resources DataMap™ Corridor Study Report

As directed in the scope of work, EIGov-ICF ordered a DataMap™ Corridor Study report from Environmental Data Resources (EDR) covering a one-mile radius surrounding the project area. The CLC-selected project area was defined as a 1,000-foot buffer surrounding the 1.75-mile stretch of El Paseo Road beginning at its intersection with University Avenue extending to its intersection with Main Street. The DataMap™ Corridor Study report provides information about properties that may have potential environmental issues such as leaking underground storage tanks, historical contamination, and hazardous waste-generating operations. The EDR DataMap™ Corridor Study report searches federal, state, and local environmental databases to identify properties located within and surrounding the project area. The EDR DataMap™ Corridor Study report for the El Paseo Corridor is provided as **Appendix B**.

2.1.3 Sanborn® Maps

Sanborn® historical fire insurance maps are typically reviewed to obtain information about former land uses. EIGov reviewed the Sanborn® historical fire insurance maps provided by the CLC and EDR; however, the available maps did not cover the El Paseo Corridor as it is defined for this project. As such, previous land uses were not identified through this data source.

2.2 Field Activities

Between March 14, 2011, and March 17, 2011, EIGov-ICF personnel visited Las Cruces, New Mexico, to conduct walk-by inspections of the properties of interest selected by the CLC and to conduct interviews of community members. The following sections describe the field activities completed by EIGov-ICF personnel.

2.2.1 Walk-by Inspections

Between March 14, 2011 and March 17, 2011, EIGov and ICF personnel conducted a set of walk-by inspections at the 131 properties selected by the City. The walk-by inspections were conducted from public rights-of-way and included documenting observations of current building conditions and site use as well as any noticeable potential environmental conditions. Photographs were also taken of each property. **Plate 1** shows the properties that were assessed during the walk-by inspections. Plate 1 shows properties with empty buildings, vacant lots, and properties that may have potential environmental concerns.

2.2.2 Interviews

As a supplement to the walk-by inspections, EIGov-ICF personnel conducted interviews with commercial real estate agents working in the area to assess any public perceptions of environmental concerns or other factors that might be impediments to development or redevelopment of the area. Agents were identified using signs posted on properties for sale or lease in the study area.

Mr. Tom Whatley of Steinborn & Associates is the selling agent for the former Guzman's greenhouse property located on University Ave. EIGov staff interviewed him on March 17, 2011. Mr. Whatley reported that some environmental testing had been performed at the greenhouse but contamination was not found. He additionally mentioned that both the Valero and Bradley gas stations had recently replaced or upgraded their tanks. He was not aware of any environmental concerns or any perceptions of environmental problems in the area.

Mr. Dave Coyle, of Coyle Real Estate, is the selling agent for a vacant lot on the 1400 block of El Paseo Road. EIGov staff spoke with him on March 16, 2011. He said that the lot is the last vacant parcel remaining of a 10-acre piece of former farmland, and that he is not aware of any environmental concerns relevant to the area.

Mr. Mark St. Paul, an agent at Exit Commercial Realty, stated in a brief phone conversation on March 16, 2011, that he was not aware of any environmental concerns in the El Paseo Corridor.

3. Assessment Findings

The primary objective of the assessment was to identify underutilized properties within the CLC-selected study area that have the highest redevelopment potential. A secondary objective was to identify properties with potential environmental concerns that might complicate future redevelopment efforts. EIGov-ICF compiled readily available records concerning the 131 properties selected by the CLC and then obtained additional information by visiting the properties. **Plate 1** shows the properties that were assessed during this study and their redevelopment potential. Section 3.1 discusses properties with the highest redevelopment potential based on the decision criteria used in City of Las Cruces' Infill Policy Plan (CLC Resolution No. 98-214)[2].

High redevelopment potential was prioritized based on the following criteria:

1. The property is developed but currently unoccupied – defined in this report as an unoccupied developed property.
2. The property is not developed and unoccupied – defined in this report as a vacant property.
3. The property is developed and minimally occupied – defined in this report as an underutilized property.

The study covered an area of 487 acres over 40 city blocks. Subtracting the area of roads and sidewalks, the net area of the study covered 407 acres; the 131 lots evaluated covered 151 acres. Of the 131 lots evaluated, nine lots had buildings and structures on them but were unoccupied. A total of 19 lots were undeveloped and vacant[3]. The total number of buildings and structures in the study area was 146; none of these structures was identified for demolition. Specific information about each property is provided in the Site Inventory Table provided as **Appendix A**.

Section 3.2 discusses properties that were identified during the assessment that may have the potential to be eligible Brownfields properties. These are properties whose redevelopment potential may be complicated by the potential presence of hazardous substances, pollutants, or contaminants. Potential eligible Brownfields properties were identified through reviewing information in the EDR DataMap™ Corridor Study report and in the Site Inventory Table.

3.1 Properties Available for Redevelopment

Based on the records obtained through the Doña Ana County Assessor's Office GIS database and walk-by inspections, a total of 29 properties were identified as having high redevelopment potential. The properties are discussed in the following sections.

3.1.1 Unoccupied Developed Properties

A total of nine properties were identified as being developed but currently unoccupied. These properties are presented in **Table 3-1** below.

---

[2] http://www.las-cruces.org/en/Departments/Community%20Development/Services/Planning%20and%20MPO/Neighborhood%20Sector/~/media/Community%20Development/Planning/infill_policy_plan.ashx

[3] Three parking lots are included in this number.

Table 3-1 Unoccupied Developed Properties El Paseo Corridor, Las Cruces, New Mexico					
Assessor's No.	**Parcel ID**	**Former Use**	**Address**	**Construction Date - Materials**	**Property Size**
4-007-136-253-073	02-07363	Office Space	120 E Wyatt Drive	1978 – Frame Stucco	0.31 acres
4-008-137-160-130	02-26594	Greenhouse	655 E University Ave	1980 – Frame	2.07 acres
4-008-136-018-229	02-26377	Walkup Counter Food Service	1601 El Paseo Road	No Data	0.26 acres
4-007-136-329-031	02-07413	Restaurant	930 El Paseo Road	1971 – Block	0.75 acres
4-007-136-331-047	02-07414	Emergency Veterinary Services	162 Wyatt Drive	1970 – Block	0.26 acres
4-007-136-341-044	02-07418	Restaurant	1028 El Paseo Road	No Data	0.32 acres
4-007-136-388-062	02-07440	Restaurant	1025 El Paseo Road	1973 – Slump Block	0.91 acres
4-008-136-180-496	02-25949	Residence	2145 El Paseo Road	1951 – Concrete Block & Stucco	0.59 acres
4-007-136-396-012	02-07436	Retail	320 E Wyatt Drive	1983 – Block	6.14 acres

3.1.2 Vacant Properties

A total of 17 vacant lots were identified in the CLC-selected study area. Three of the vacant lots are currently used as parking lots. The vacant lot properties are presented in **Table 3-2** below.

Table 3-2 Vacant Lot Properties El Paseo Corridor, Las Cruces, New Mexico				
Assessor's No.	**Parcel ID**	**Current Use**	**Address**	**Property Size**
4-007-136-291-075	02-07395	Vacant Lot	No Data	2.07 acres
4-007-135-350-504	02-26590	Vacant Lot	920 S Campo St	1.66 acres
4-007-136-436-201	02-07459	Vacant Lot	430 Foster Road	0.23 acres
4-007-136-489-210	02-26344	Vacant Lot	No Data	0.76 acres
4-007-136-513-284	02-07502	Vacant Lot	390 E Boutz Road	1.29 acres
4-008-136-200-482	02-41132	Vacant Lot	No Data	No Data
4-008-137-179-117	02-13164	Vacant Lot	2600 El Paseo Road	0.27 acres
4-007-136-333-081	02-07415	Vacant Lot	1210 El Paseo Road	0.71 acres
4-008-137-184-005	02-24727	Vacant Lot	No Data	0.14 acres
4-008-137-232-040	02-25774	Vacant Lot	No Data	1.78 acres
4-008-137-238-059	02-25771	Vacant Lot	No Data	0.97 acres
4-008-136-044-263	02-11455	Vacant Lot	No Data	0.03 acres
4-008-136-056-259	02-11475	Vacant Lot	No Data	0.11 acres
4-007-136-379-051	02-07451	Parking Lot for former fast food restaurant	1025 El Paseo Road	0.28 acres
4-007-136-441-021	02-27795	Parking Lot for NM Human Services	655 Utah Avenue	1.36 acres

Table 3-2 Vacant Lot Properties El Paseo Corridor, Las Cruces, New Mexico				
Assessor's No.	**Parcel ID**	**Current Use**	**Address**	**Property Size**
		Department		
4-007-136-487-492	02-07482	Parking Lot for Style America	No Data	0.31 acres
4-007-136-402-194	02-07444	Vacant Lot	405 Foster Road	0.23 acres

3.1.3 Underutilized Properties

Three underutilized properties were identified within the EPC study area. These two properties are presented in **Table 3-3** below.

Table 3-3 Underutilized Properties El Paseo Corridor, Las Cruces, New Mexico					
Assessor's No.	**Parcel ID**	**Current Use**	**Address**	**Construction Date - Materials**	**Property Size**
4-007-135-250-507	02-06077	Unknown - Motel	800 S Main Street	1945 - Frame	0.95 acres
4-007-135-389-515	02-06541	Shopping Plaza	312 E Wyatt Drive	1985 – Block	1.71 acres
4-008-136-038-247	02-18661	Unknown Use	1605 El Paseo Road, Unit C	No Date – Block Stucco	0.19 acres

3.2 Properties with Potential Environmental Concerns

In order to identify properties with potential environmental concerns, EIGov-ICF evaluated a number of sources of data. The first source of data was an EDR DataMap™ Corridor Study report; findings are discussed in Section 3.2.1. The second source of data was the information gathered for the Site Inventory Table; findings are discussed in Section 3.2.2.

3.2.1 EDR DataMap™ Corridor Study Findings

EIGov-ICF ordered an EDR DataMap™ Corridor Study report covering a one-mile radius surrounding the CLC-selected study area. The report searched federal and state environmental databases and identified 126 properties within the one-mile radius around the CLC-selected study area that are listed in these environmental databases. The environmental databases that identified properties within the one-mile radius and the information contained in each database are summarized in **Table 3-4**, below. The number of properties within the one-mile radius around the CLC-selected study area identified in each database is also provided in **Table 3-4**. The EDR report is provided as **Appendix B**.

Table 3-4 Federal & State Environmental Database Summary El Paseo Corridor, Las Cruces, New Mexico			
Environmental Database	**Type of Information Included**	**Report Date**	**Number of Properties**

Table 3-4 Federal & State Environmental Database Summary El Paseo Corridor, Las Cruces, New Mexico			
Environmental Database	**Type of Information Included**	**Report Date**	**Number of Properties**
Federal Environmental Databases			
CERCLIS - Comprehensive Environmental Response, Compensation, and Liability Information System	Contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.	11/30/2010	2
CORRACTS – Resource Conservation & Recovery Act (RCRA) Corrective Action Activity	List of hazardous waste handlers that have had corrective action activity.	5/25/2010	1
RCRA-LQG – RCRA Large Quantity Generator	Information on sites that generate, transport, store, treat, and/or dispose of hazardous waste as defined by RCRA. LQGs generate over 1,000 kg of hazardous waste per month or over 1 kg of acutely hazardous waste per month.	2/17/2010	1
RCRA-SQG – RCRA Small Quantity Generator.	Information on sites that generate, transport, store, treat, and/or dispose of hazardous waste as defined by RCRA. SQGs generate between 100 kg and 1,000 kg of hazardous waste per month.	2/17/2010	5
RCRA-CESQG – RCRA Conditionally Exempt Small Quantity Generator	Information on sites that generate, transport, store, treat, and/or dispose of hazardous waste as defined by RCRA. CESQGs generate less than 100 kg of hazardous waste per month or less than 1 kg of acutely hazardous waste per month.	2/17/2010	13
RCRA-NonGen – RCRA Non-Generators	Information on sites that generate, transport, store, treat, and/or dispose of hazardous waste as defined by RCRA. NonGens do not presently generate hazardous waste.	2/17/2010	16
ERNS – Emergency Response Notification System	Information on reported releases of oil and hazardous substances.	12/31/2010	1
HMIRS – Hazardous Materials Incident Report System	Information on hazardous material spill incidents reported to the Department of Transportation.	12/31/2010	1
MINES – Mines Master Index File	Information provided by the Department of Labor, Mine Safety and health Administration.	8/4/2010	2
FTTS – FIFRA/TSCA Tracking System	Tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA, and EPCRA over the past five years.	4/9/2009	4
HIST FTTS	A complete administrative case listing from the FTTS for all 10 EPA regions.	10/19/2006	4
SSTS – Section Seven Tracking System	Section 7 of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)	12/31/2009	2

Table 3-4 Federal & State Environmental Database Summary El Paseo Corridor, Las Cruces, New Mexico			
Environmental Database	**Type of Information Included**	**Report Date**	**Number of Properties**
	requires registered pesticide-producing businesses to submit a report to the EPA annually. This list tracks those businesses that submit Section 7 reports.		
ICIS – Integrated Compliance Information System	Provides information for national enforcement and compliance program and the National Pollutant Discharge Elimination System (NPDES) program.	1/7/2011	9
MLTS – Material Licensing Tracking System	Maintained by the Nuclear Regulatory Commission (NRC), tracks information on sites that possess or use radioactive materials and are subject to NRC licensing requirements.	3/18/2010	1
FINDS – Facility Index System	Facility information and pointers to other environmental information sources.	4/14/2010	159
RAATS – RCRA Administrative Tracking System	Information based on enforcement actions issued under RCRA and pertaining to major violators.	4/17/1995	1
State Environmental Databases			
NM SCS – New Mexico State Cleanup Sites	State cleanup sites that fall under the state's Water Quality Control Commission Regulations.	3/1/2011	8
NM LUST – New Mexico Leaking Underground Storage Tanks	Inventory of reported leaking underground storage tank (UST) incidents. Also includes the status of cleanup.	8/1/2006	36
NM UST – New Mexico Underground Storage Tanks	Inventory of registered USTs.	8/1/2006	103
NM LAST – New Mexico Leaking Aboveground Storage Tanks	Inventory of leaking aboveground storage tank (AST) incidents.	8/1/2006	6
NM AST – New Mexico Aboveground Storage Tanks	Inventory of registered ASTs.	8/1/2006	6
WI MANIFEST	Hazardous waste manifest information.	No Date	1
NM SPILLS	Hazardous materials spills data.	1/12/2006	5
NM DRYCLEANERS	Listing of dry cleaner facility locations.	1/6/2010	6
NM NPDES – New Mexico National Pollutant Discharge Elimination System	Information regarding facilities with NPDES permits.	4/13/2010	6
NM ASBESTOS	Facilities reported as having asbestos-containing building material.	4/1/2007	6

Of the 126 properties located within the one-mile search radius of the CLC-selected study area, a total of 23 properties located within the boundaries of the CLC-selected study area were identified in the federal and state environmental databases. These properties are identified on **Plate 1** with an EDR report map identification number and summarized in **Table 3-5**.

Of the 23 properties located within the CLC-selected study area, one property was listed in the CERCLIS database, indicating that it is being considered for inclusion or is on the National Priorities List. This means that environmental contamination is likely present on the property. This property is located at 750 South Main Street at the north end of the CLC-selected study area.

One property was listed in the RCRA-NonGen database indicating that it may have generated RCRA-defined hazardous waste at some point during its operation. One property is listed in the RCRA-CESQG database, indicating that RCRA-defined hazardous waste is currently generated on the property. One property is listed in the RCRA-SQG database.

Fifteen properties were identified in the FINDS environmental database indicating that the property may be listed in other federal environmental databases.

A total of fifteen properties were identified in the NM UST database while ten properties were listed in the NM LUST environmental database. Of the ten properties, a No-Further Action Required (NFA) status was reported for five properties. Three of the properties were reported to be in the process of cleanup by the responsible party. Two properties were reported as being investigated for contamination by the responsible party.

Two properties are listed in the NM AST database, one of which is also listed in the NM LAST database. The property in both the NM AST and NM LAST databases also was listed in the NM LUST database.

One property is listed in the NM DRYCLEANERS database and one property is listed in the NM ASBESTOS environmental database.

Table 3-5
EPC Properties Identified in EDR Corridor Study Report
El Paseo Corridor, Las Cruces, New Mexico

Parcel ID	EDR Map ID	EDR Database(s)	Address	Business Name*
02-06060	44	CERCLIS	750 South Main Street	Main & Alameda Solvents
		FINDS		
		NM LUST – Cleanup, Responsible Party (RP)		Food & Fuel Stores Midtown C
		NM UST		
02-26588	49	RCRA NonGen	845 El Paseo Road	Dardanelle Timberlo Sutherland
		FINDS		
02-29313	49	NM LUST – NFA	840 El Paseo Road	Business Products Center
	52	NM UST		
02-07404	52	FINDS	920 El Paseo Road	Sav-O-Mat-B
		NM LUST – Cleanup, RP		
		NM UST		
02-07436	55	RCRA-NonGen	320 Wyatt Drive	Raleys No. 801
		FINDS		
02-27793	57	NM DRYCLEANERS	555 Utah Avenue	Comet 1-Hour Cleaners and Laundromat
02-07398	58	RCRA-CESQG	138 Wyatt Drive	Performance Machines

Table 3-5 EPC Properties Identified in EDR Corridor Study Report El Paseo Corridor, Las Cruces, New Mexico				
Parcel ID	**EDR Map ID**	**EDR Database(s)**	**Address**	**Business Name***
		FINDS		
02-07345	60	FINDS	106 Wyatt Drive	Big Jack and Son, Inc.
		NM UST		
02-20075	62	FINDS	1165 El Paseo Road	Tire Center Plus
		NM LUST – NFA		
		NM UST		
02-07415**		FINDS	1206 El Paseo Road	Bradley Food Mart
		NM LUST – NFA		
		NM UST		
02-07425	66	NM UST	1240 El Paseo Road	Kmart Number 3058
02-07469	71	FINDS	1305 El Paseo Road	DS1291
		NM UST		
		NM LUST – NFA		Bar F 25
02-11391	78	FINDS	1608 El Paseo Road	El Paseo MC
		NM UST		Circle K 295
02-11465	78	NM UST	1611 El Paseo Road	Laundromat (listed in EDR as Circle K)
02-11497	80	FINDS	1702 El Paseo Road	Sweet Indulgence Café
		NM LUST – Investigation, RP		
		NM LAST		
		NM AST		
02-07412	81	NM LUST – Investigation, RP	1601 S Main St	Wallace Chevrolet Oldsmobile Cadillac
		RCRA-SQG		
		NM UST		Bravo Chevrolet Cadillac
		NM AST		
02-27761	82	FINDS	300 E Boutz Road	Bacas Funeral Chapel
02-11808**	83	FINDS	1802 S Espina	Sandia Fina
		NM LUST – Cleanup, RP		
		NM UST		
02-11804**	84	NM UST	1796 S E Park Drive	Frenger Lift Station C
02-40614	86	FINDS	1755 El Paseo Road	Las Cruces High School
		NM Asbestos		
02-07422	87	NM SPILLS	195 E Boutz Road	Not Reported
02-11857	90	FINDS	1888 S Espina	Ropers Lubricator Larry Harris
		NM UST		
02-27832	93	NM LUST – NFA	1940 S Espina	Former Station
		NM UST		Espina

* As listed in the EDR DataSummary™ Corridor Study Report. The current business name may be different than what is listed in the report.

** Closest property to reported address.

3.2.2 Site Inventory Table Findings

EIGov-ICF reviewed the Site Inventory Table to identify properties with potential environmental concerns. EIGov-ICF identified 15 properties in the CLC-selected study area whose current use is typically correlated with environmental problems due to the use of hazardous substances and petroleum products in their operations. These uses include retail fuel sales, automotive repair, dry cleaning operations, and photo processing. It should be noted that the properties identified herein are all currently operating businesses and are not considered underutilized as defined by the CLC. **Table 3-6** summarizes the properties identified in the Site Inventory Table that, based on current use, may potentially have environmental concerns.

Table 3-6
Properties with Potential Environmental Concerns
El Paseo Corridor, Las Cruces, New Mexico

Assessor's No.	Parcel ID	Current Use	Address	Construction Date - Materials	Property Size
4-007135-269-500	02-06110	Automotive Repair, Car Wash & Retail	800 El Paseo Road	1970 - Metal	0.79 acres
4-007-135-289-525	02-23993	Photo processing	840 El Paseo Road, Unit A	1969 – Metal	0.3 acres
4-007-136-309-031	02-07404	Retail Fuel Sales	920 El Paseo Road	1970 – Brick	0.79 acres
4-007-136-415-055	02-20075	Automotive Repair	1165 El Paseo Road	1988 – Concrete	0.57 acres
4-007-136-424-132	02-07452	Retail Fuel Sales	1260 El Paseo Road	1972 – Brick	0.68 acres
4-007-136-426-063	02-27793	Dry Cleaning & Retail	555 Utah Avenue	2001 – Block Stucco	1.2 acres
4-007-136-431-186	02-07455	Automotive Repair	435 Foster Road	1973 – Metal	0.23 acres
4-007-136-451-181	02-07462	Automotive (Glass)	455 Foster Road	1982 – Metal	0.29 acres
4-007-136-455-195	02-07465	Automotive	450 Foster Road	1978 – Block	0.23 acres
4-007-136-464-144	02-07469	Retail Fuel Sales	1305 El Paseo Road	No Data	0.58 acres
4-007-136-465-177	02-07470	Automotive Repair (Tires)	1330 El Paseo Road	1973 – Block	0.46 acres
4-007-136-503-219	02-23948	Automotive Parts Sales	1554 El Paseo Road	1995 – Frame Stucco	0.75 acres
4-007-136-325-364	02-07412	Automotive Sales	1601 South Main Street	1970 – Block	4.9 acres
4-007-135-237-444	02-06060	Automotive Sales	750 South Main Street	1970 – Brick	0.5 acres
4-007-136-345-410	02-22217	Automotive Sales	1801 South Main Street	2007 – Metal	5 acres

EIGov-ICF also used the Site Inventory Table to identify properties with on-site buildings that may have asbestos-containing materials (ACM). Properties were identified solely on the basis of the date of

construction. Use of asbestos in construction was mostly discontinued in 1989[4]; therefore, buildings constructed prior to 1989 have a higher potential of containing ACM. Based on this criterion, a total of 72 buildings within the CLC-selected study area were constructed prior to 1989 and have a potential for containing ACM. All nine buildings identified as developed but unoccupied in Section 3.1.1 were constructed prior to 1989. At least two of the underutilized properties identified in Section 3.1.3 were constructed prior to 1989. The construction date of the structure on the third underutilized property is not known at this time.

[4] The EPA banned the use of ACM in 1989 under the Toxic Substance Control Act, but the ban was overturned in 1991. The materials that remain banned are asbestos-containing corrugated paper, rollboard, commercial paper, specialty paper, flooring felt, and new uses of asbestos. Asbestos is still allowed for use in other construction materials.

4. Conclusions

The Region 6 EPA tasked the EIGov-ICF team with performing an area-wide assessment of the redevelopment potential of properties along the El Paseo Road business corridor to help the City of Las Cruces, New Mexico develop a revitalization strategy for this area. The CLC defined the boundaries of the EPC as a 1,000-foot buffer around the 1.75-mile stretch of El Paseo Road bounded by Main Street on the north and University Avenue on the south. The project area includes over 650 commercial, private, and residential properties; however, this study focused on 131 properties selected by the CLC for further investigation. The project also included identifying properties whose redevelopment could potentially be complicated due to the presence of environmental concerns.

EIGov-ICF obtained, compiled, and reviewed property information from the Doña Ana County Assessor's office then conducted walk-by inspections of all 131 properties selected by the CLC for evaluation. As directed by the Statement of Work, EIGov-ICF also obtained an EDR DataSummary™ Corridor Study report for a one-mile radius around the CLC-selected study area to assist in identifying properties with potential environmental concerns.

Based on the information obtained from the Doña Ana County Assessor's office and walk-by inspections, EIGov-ICF identified a total of 29 properties within the CLC-selected study area as having high redevelopment potential. Redevelopment potential was considered high if the property was developed but unoccupied, was vacant, or was underutilized. Of those 29 properties, nine properties were identified as being developed but currently unoccupied; 17 were identified as vacant lots; and three were identified as being underutilized.

Based on the information contained in the EDR DataSummary™ Corridor Study report, EIGov-ICF identified a total of 23 properties within the CLC-selected study area as having potential environmental concerns due to the properties being listed in environmental databases. None of these properties is included in the 29 properties identified as having high redevelopment potential.

A total of 15 properties were identified as having potential environmental concerns based on their current use being typically correlated with environmental problems due to the use of hazardous substances and petroleum products in their operations. None of these 15 properties is included in the 29 properties identified as having high redevelopment potential.

However, of the 29 properties identified as having high redevelopment potential, 11 properties were identified that may potentially have asbestos-containing materials in the on-site structures based solely on the construction date. These 11 properties include the nine developed, but unoccupied properties and two of the underutilized properties.

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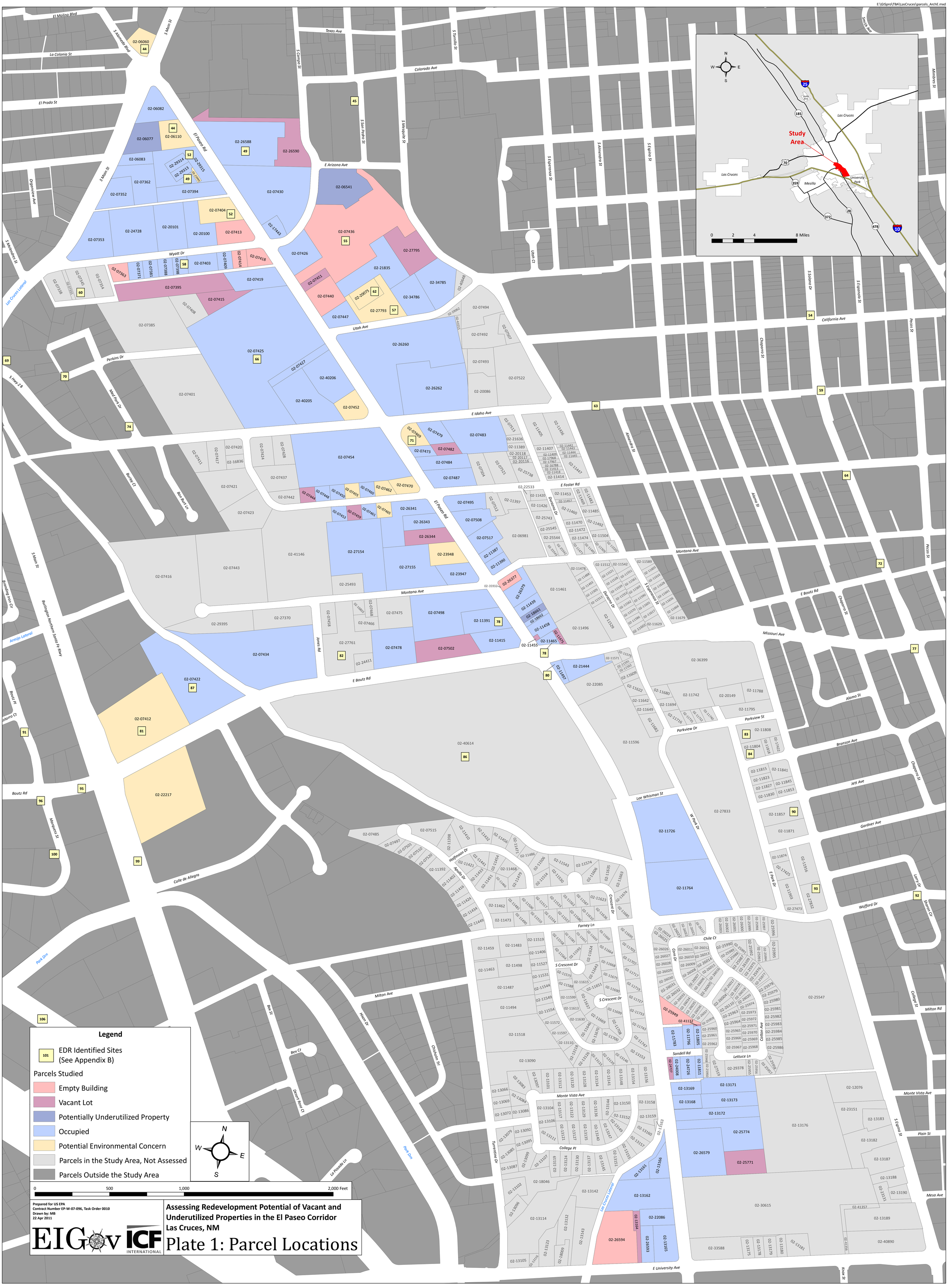

Picturing El Paseo Corridor: A Qualitative Analysis for the City of Las Cruces, New Mexico

Final Report

GOVT 519
By
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5/26/2011

Introduction

Picturing El Paseo is a visioning project that utilizes input from the community and professionals across the region to create a vision for the El Paseo Corridor. Visioning workshops, professional conferences, and an online survey were used to gather information from the public. The project incorporated the help of four graduate students from various programs at New Mexico State University (NMSU). Their main focus was to perform a qualitative data analysis on the data gathered from public input and report their findings.

This report was completed as part of an internship course for Master of Public of Administration (MPA) students at NMSU. With the help and guidance of Dr. Diane Prindeville, Associate Professor and MPA Director in the Department of Government at NMSU students were able to obtain internships with the non-profit citizen's group, Institute for Citizen Engagement (IFCE). Carol McCall from the City of Las Cruces Community Development Department worked closely with the interns and supervised the project to ensure the needs of the El Paseo Corridor Project were addressed. Ms. McCall was essential in guiding and supervising the progress of the interns and the final analyses and editing of the written report. In addition to the MPA students, two other NMSU students joined the project. Chris Romero, a graduate student in Criminal Justice, contributed to the data analysis and report as part of GOVT 503: Qualitative Methods. Adam Tankersley, a graduating senior in the Geography Department, is employed as a co-op student with the City of Las Cruces Community Development Department and contributed his expertise in Geographic Information Systems (GIS).

The graduate students brought to the table a different perspective to the data analysis process by discussing different qualitative methods that have been used in similar projects. These students were asked to apply the knowledge and skills they have gained from their respective programs to this project by analyzing public input. We expect that this work will lay the foundation for future analysis and a redevelopment strategy for both the City and private developers. Their work will be used to further understand the community's vision for the El Paseo corridor.

Project Background

Las Cruces, New Mexico was one of four US cities selected to participate in the 2010 Smart Growth Implementation Assistance (SGIA) Program, developed by the U.S. Environmental Protection Agency (EPA) and involving the U.S. Department of Transportation-Federal Highway Administration (FHWA) and the U.S. Department of Housing and Urban Development (HUD). The SGIA program provided the City of Las Cruces with technical support to improve community planning processes and to develop a vision for El Paseo Road. This vision may eventually lead to a redevelopment plan for a vital economic corridor that links the downtown district and the University Avenue/New Mexico State University area. The goal of this collaboration between Las Cruces and its federal partners has been to implement long range planning that

incorporates smart growth and livability at the neighborhood level and to involve the public in determining goals for a redevelopment strategy.

The underlying purpose of the "Picturing El Paseo" project has been to develop a new and innovative public engagement model. Our intention was to involve individuals who may not ordinarily attend public meetings or express their views on City planning efforts, such as seniors, the disabled, students and minority populations. The project offered participants an opportunity to engage in several kinds of activities designed to heighten their creativity and evoke candid opinions about problems and opportunities that exist along the corridor. Perspective drawing, mapping exercises, Photovoice© collages, and visual preference surveys are a few of the activities that focused on such concerns as walkability, connectivity and transportation, economic revitalization, affordable housing and urban design. The input collected during two intensive visioning workshops is a useful starting point for any future planning efforts to revitalize the El Paseo corridor.

In addition, a public engagement plan and "tool kit" of public participation methods will be developed based on this project that can be used locally and across the country to help local governments improve their own public input process.

Goals

The goal of the Picturing El Paseo Project is to implement long range planning that incorporates smart growth and livability at the neighborhood level. This project utilizes community input to create a vision for the El Paseo corridor that includes the use of sustainable infrastructure. The project seeks to be the framework for future revitalization of the corridor and forms the basis for improving the lives of those who live and work in the area.

The Picturing El Paseo project is a public visioning process that imagines a better El Paseo Road. City staff wanted to know what the public thought about living, working and visiting areas along El Paseo. Questions asked included:

- What do you want the future El Paseo road to look like so it can be a vital connection between University Avenue and Downtown?
- What can we do to improve street connectivity and make travel safer by foot, bike, public transit and car?
- What kinds of land uses would you like to have located on El Paseo? More stores? Places to live? Offices?

Picturing El Paseo is the first step toward a better El Paseo Road that is inviting and attractive to our community and visitors. By answering these questions we can better understand how the community envisions this area in five to ten years, while also incorporating sustainability techniques into the corridor.

El Paseo Road

El Paseo Road is approximately 1.7 miles long and stretches from downtown Main Street to University Avenue. The corridor has many businesses ranging from national and local restaurants, banks, a movie theater, building supply stores, social service offices, a chain grocery store, and a local organic food co-op. Despite these businesses that have thrived in the area many of the commercial area remains vacant. Building fronts have become unattractive due to insufficient building maintenance and big block buildings have downgraded the community's look and feel. The result is a corridor that is not especially pedestrian-friendly. The area has narrow or missing sidewalks, which are generally cracked or uneven. This can be potential harmful to anyone walking down El Paseo, especially the elderly or disabled.

El Paseo Road, between Farney Lane and Main Street, generally has a higher traffic volume. The intersection of Idaho Ave and El Paseo has the highest number of pedestrian related accidents in the City. El Paseo is also home to Las Cruces High School which was built in 1954 and currently has a student population of over 2,300 students. Due to the amount of traffic and lack of safety along El Paseo, students who walk to school or nearby restaurant for lunch are often at risk. El Paseo Road is seen as a gateway to both downtown and the university; however, its current circumstances are not best utilized.

Methods

The visioning process began by reaching out to the public through various methods including: press releases, radio interviews with City staff, TV news features, CLC-TV promotions, articles in specials interest newsletters, interview with senior citizens, announcements at Las Cruces High School (LCHS) and Las Cruces Public Schools (LCPS), and e-mail networks through special interest groups (religious groups, developers, educators, LC Housing Authority etc.). This outreach process was aimed at notifying a variety of community member, from all backgrounds, so they may participate in the vision process. The main goal was to communicate the goals of the Picturing El Paseo Project and information about how they can voice their opinion on the vision of El Paseo.

The next step in the visioning process was to gather community input. City of Las Cruces Community Development staff put together a series of activities for participants to complete at the Visioning Workshops. In addition to data gathered through the Visioning Workshops, City staff also gathered input at two professional conferences.

At the Visioning Workshops attendees were first given a brief presentation on Green Infrastructure (GI), which was used to show the benefits of GI and how it could be use along the El Paseo corridor. Posters and other information were also made available at the workshop. After the presentation attendees then went to several stations, which either had a mapping exercise, perspective drawing exercise, or a visual preference survey.

Mapping Exercise
City staff put together a mapping exercise that gives attendees the opportunity to write comments on a map. This type of exercise allows participants to not only give comments on how the corridor should be changed, but also allows them to identify specific locations along the corridor where a potential change could be made to better the community. The mapping exercise was used at both Visioning Workshops and both professional conferences. Attendees of the conferences were divided into group to discuss their vision for El Paseo. After each group had sufficient time to discuses and depict changes on their maps they were then ask to give a brief presentation on how they envision El Paseo Road and the problems that need to be address along the corridor.

Perspective Drawings
City staff put together another exercise that utilized the artistic side of attendees to help envision the future El Paseo Corridor. Tracing paper was overlaid onto 11 by 17 photos of the El Paseo corridor and artists sketched over the photos asparticipants described their visions. Participants were also encouraged to write comments on their drawings to further describe how they envision the corridor. This exercise was used during both Visioning Workshops.

Visual Preference Survey
The Visual Preference Survey is an online survey that utilized photos to describe themes or ideas. Each question in the survey had three photos that showed three different variation of a specific theme (bike lane in roadway vs. bike lane off road vs. off street bike path). Each individual rated the photos on a five point scale, "Strongly Dislike to Strongly Like". At the end of each question a comment box was available for those that wanted to add additional comments regarding the question.

PhotoVoice
City staff invited photographers to take pictures along the El Paseo corridor. Attendees were asked to take pictures of El Paseo that depicted both problems they saw and thing they liked about the corridor. Images from other city were also used to show thing they would like to see along the corridor. Participants were then asked to make a photo collage using both positive and negative photos that they felt accurately portrayed the El Paseo corridor. From these collages the photos that were used the mosted were counted. A "super collage" was created that using the most-used photos.

Make A Statement
In addition to the visioning exercise used at the November Visioning Workshop, participants were also provide with note cards that asked attendees to write how they envision El Paseo in five to ten years. Index cards were collected and used in the data analysis process.

Ballot Boxes
City staff also utilized ballot boxes, which were placed at several locations along El Paseo to get additional comments from the public. Ballot boxes were placed at Village Inn Restaurant, Style America Hair Salon, International Delights Café, Business Product, Inc., City Hall and Munson

Senior Center. Index cards were available at each ballot box that asked, “What’s your vision for El Paseo?”Respondents were also asked to list their top three priorities for the corridor. The index cards were then gathered and used in the data analysis process.

Professional Input

In addition to talking to residents, shoppers, business people, students and visitors to the El Paseo area, City staff also asked planners, engineers and architects what they thought at two professional conferences held last year. The first, “Green Infrastructure in the Southwest: Challenges and Opportunities,” was held August 26. The second, “Planning Gets Spicy,” was the annual conference of the New Mexico Chapter of the American Planning Association. Input from these conferences is described below.

The Green Infrastructure of the Southwest conference was used as a venue to gather professional input. The goal of the conference was to raise awareness about the applications of green infrastructure principles and to help address a focus area the Picturing El Paseo Project.

Green infrastructure (GI), also referred to as “low impact development,” are smart growth techniques that attempt to manages stormwater effectively. Unlike traditional land use designs, GI promotes natural stormwater management techniques to minimize runoff and help prevent pollution. GI techniques include permeable pavement, reduced roadway surfaces, bio-swales, green roofs, bio-retention basins, and cisterns. Green infrastructure offers a sound alternative to conventional storm water management and provides benefits such as water conservation, beautification, and reduction in pollution.

To utilize their expertise in their respective fields we divide attendees into groups to discuss their ideas about how GI could be implemented into the El Paseo Corridor. Each group was provided with a map of a particular area of El Paseo, where they could draw and make suggestions on how the area could be improved. This exercise was similar to the mapping exercise at the Visioning Workshops. These maps and comments were used in the data analysis process and gave a professional perspective on the future of El Paseo.

The NMAPA conferences gave New Mexico planning professionals an opportunity to learn about planning projects across the state and network with colleagues working in various disciplines. The mobile El Paseo workshop included a trip down the corridor with stops at various locations to discuss some of the challenges and opportunities the project is exploring. The workshop continued with an interactive session at the conference led by City staff, including the engineers who will be redesigning the Idaho/El Paseo intersection. The group took part in a similar mapping exercise that the attendees at the Green Infrastructure Conference participated in.

Data Analysis Process

All data gathered through the above methods were then used in a qualitative data analysis process to determine key theme from each exercise. The themes gathered from each exercise were then used to create a preliminary vision statement for the El Paseo Corridor.

With the data collected through each exercise,the intern team analyzed and evaluated the data using the qualitative methods learned through their studies at NMSU. The intern team used statistical analyses methods to quantify response. Using a qualitative measure the intern team identified key themes and documented them in charts. They then used these themes to quantify the overall vision of the corridor.

The City not only wants to know what the community envisioned for the El Paseo corridor, but also what was more important to the community. For this purpose a quantitative method was used to analyze the data. The intern team performed statistical hand calculations as a starting point. These simple hand calculations helped better understand the data in terms of percentages of what people wanted or hoped to see implemented for the El Paseo Corridor.

Written Comments Data: What's Your Vision for El Paseo?

Many written comments were detailed and had specific items they would like to see incorporated along El Paseo road. For example, one respondent states his preferences, "Small business and public community-oriented gathering places that include well shaded areas, areas that would attract tourists, old-fashioned family business and markets with lots of comfortable places to sit." There were several references about wanting more local businesses and the need to "clean up" existing businesses or "make them up-to-date".

Not surprising was the overwhelming expression for a more pedestrian and bike friendly area. Some words used include: "multi-use path", "Walking sidewalk", "walkable/bikable corridor", "bike lanes", and "open to foot traffic". This has been a common and popular theme recognized within all the data collected for the El Paseo Project. People believe that having a more pedestrian and bike friendly way to travel along El Paseo Road will make the corridor more attractive to others and promote a healthy and fit lifestyle.

In an effort to beautify the area, many respondents also would like to see more landscaping along the corridor. "Trees and parks," "greenbelt," and "local plant landscaping," are just a few comments that respondents envision for El Paseo. Building on this theme, while many wanted more trees, plants, and landscaping, many also see water conservation as important, thus, asking for trees and plants that require little watering or none at all.

Top 3 Priorities Data

From the several ballot boxes that were place at businesses along El Paseo only thirty index cards were collected. The index cards show many similarities, but also some differences between lists of top 3 priorities. Of the thirty cards returned:

- 61% of participants requested or listed bike lanes and/or paths as their top priority.
- With 26% walking paths and/or sidewalks came in as the second top priority for respondents.
- The third priority was tied for requests for transit and landscaping both at 23%.
- Following closely behind transit and landscaping is increased shade and art. 19% of respondents wanting to see more of these items along El Paseo Road.

The data shows that many community members feel that bike lane and/or paths are the main priority in their vision for El Paseo. Community members also feel that there is a need for wider walkable sidewalks, and walking paths for the El Paseo Corridor. Transit and Landscaping were also a common theme through the comments. Some terms used include better access to public transit, green trees, plants and shrubbery, and items such as water fountains, art, and nature scenes.

Visual Preference Survey

The visual preference survey results revealed that many people like the photos that showed some kind of low impact development or green infrastructure technique. Of those that took the survey 34 individuals strongly liked the use of cisterns and other water harvesting techniques along the El Paseo corridor. Many individuals also like the use of passive water harvesting systems were stormwater flows directly into landscaped areas. A combination of the two methods could possibly be incorporated into the design of the corridor. Although we see a common opinion about many photos in the survey, there were also photos were the majority of individuals liked the all three photos. The table below shows the results of the survey.

		Strong Dislike	Dislike	Neutral	Like	Strong Like
1.1	Single family houses	2	4	11	27	13
1.2	Single family "townhouse style"	3	14	9	23	8
1.3	Apartment complex housing	3	10	20	22	2
2.1	Natural irrigation only	1	5	8	26	15
2.2	Low irrigation	0	1	4	32	19
2.3	Medium irrigation	1	4	5	27	20
3.1	Bike lane in roadway	7	7	12	18	12
3.2	Bike lane separated from roadway	3	4	6	22	22
3.3	Off street bike path	0	2	6	21	28
4.1	Buildings and landscape near the street with parking in back	6	6	7	13	23
4.2	Parking along the street and buildings set back	19	18	10	8	1
4.3	A mix of both configurations, buildings set in parking lots	6	15	15	12	8
5.1	One story buildings	6	21	20	7	2
5.2	Two or three story buildings	1	6	3	23	23

5.3	Four story or taller buildings	8	11	20	15	1
6.1	Striped crosswalk with no signals or pedestrian median	1	12	22	16	5
6.2	Pedestrian controlled signal at crossings with striping/markings and median	0	2	7	25	22
6.3	Elevated bridge for pedestrian use	9	10	7	15	14
7.1	Roundabout intersections	7	4	12	13	20
7.2	Intersection designed for vehicle traffic flow	14	12	16	11	2
7.3	Intersection with pedestrian crosswalks and median	0	2	14	22	18
8.1	Commercial space in residential space	3	9	6	26	11
8.2	Commercial space with residential above	0	3	6	23	23
8.3	Commercial and residential are distinct spaces	2	8	22	21	2
9.1	Traditional conveyance to existing stormdrains	0	9	17	22	7
9.2	Passive water harvesting systems - rainwater flows into landscaping	0	1	4	24	26
9.3	Rainwater is "harvested" and stored in cisterns for landscaping irrigation	0	2	7	12	34
10.1	Southwest Architecture	0	8	11	25	11
10.2	Neo-traditional Architecture	0	6	16	13	20
10.3	Modern Architecture	4	14	17	15	5

*Green cell indicated the greatest number of votes for a particular photo.

Professional Input -- Green Infrastructure Data

Attendees of the Green Infrastructure Conference were asked to utilize their knowledge of GI in a group exercise to generate ideas for potential retrofit projects appropriate to the corridor.

From the data, people had more concern for pedestrian interests and the architectural structure of the streets and buildings. Comments similar to “improved walk ability” and “the need for trees” weren’t uncommon to hear.

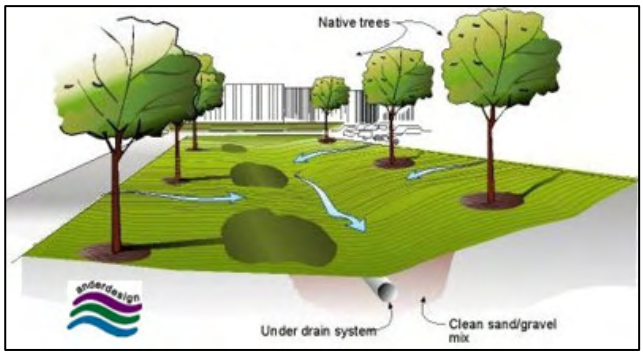
At the street level, data showed the need for:

- Increased lighting, improvements in walkways
- An adjustment to traffic congestion with changes in street design
- Talk of a roundabout at El Paseo and Main Street seemed completely feasible.
- Planted medians,
- Trolley or monorail stations and
- Bike paths
- Stormwater management practices (GI).

Many comments referred to the potential use of wasted space, including parking lot, vacant buildings and undeveloped lots, by filling this space with trees, community gardens, parks, and amphitheaters. Attendees also expressed interest in moving parking lots back from the streets or to the rear of the building and removing unused and unwanted billboards. The data also showed that many attendees commented on the need for shade at bus stops along El Paseo.

Many bus stops do not have a sheltered waiting area or trees near by to shade the uncomfortable benches. Stops could also be improved by adding bus pull offs so that City buses do not interfere with traffic flow.

Most of the buildings and businesses on El Paseo remained untouched for the most part, but their surrounding environment was the focus of people's comments. At the Las Cruces High School site, cisterns, retention ponds, vegetated bio swales, underground water storage and an integrated storm water and parking lot entity were the top ideas. In addition, the Walgreen and K-Mart sites had similar issues; cars and pedestrians have too much interaction due to a lack of walkways. Redevelopment of the K-Mart parking lot, by adding a mixed-use building that is located closer to the roadway, trees, improving sidewalks and roadway, and a large interconnected green space, would greatly improve this area. Building structures that are closer to the roadway reduce visibility of parking from street view and add to the attractiveness of the corridor. Also the redevelopment of the vacant lots nearby using similar ideas will help keep the new look and feel of El Paseo consistent, while also preserving the view of the Organ Mountains.



The Green Infrastructure Conference gave a professional perspective regarding the future of El Paseo. Attendees envision a place were GI is utilized in a way to reduce stormwater runoff problems and support the attractiveness of the El Paseo corridor. Many techniques mentioned during the conference could be implemented into the future design of El Paseo.

Professional Input -- NMAPA Conference Data

A multitude of ideas and suggestions were collected during the NMAPA conference. A total of 87 responses were recorded. Similar responses were grouped together creating 44 separate issues. These were then categorized into 6 different groups mentioned: Safety, access/usability, landscaping, attractiveness, transportation, and building style.

Safety

Safety appears to be a significant issue on the El Paseo Corridor. Concerns noted by APA Conference participants include dangerous crosswalks, the lack of designated bike lanes or sharrows (shared lane), and the need for mid block crossings. Walking bridges are another popular suggestion among conference goers. These types of suggestions and concerns account for approximately 16% of the APA Conference data. Out of this group:

- 33% More street crossings
- 13% Sharrows
- 7% Pedestrian Refuge

- 7% Safer cross sections
- 40% Mid block crossings

Access, Usability, and Utility
Access and usability account for more than a third (36%), of data gathered at the APA Conference. Such suggestions and concerns included the use of frontage roads, bike lanes, wider sidewalks, walking paths, a roundabout at major intersections, curb cuts, street parking, and road diets to slow traffic, or more lanes to decongest traffic. The information collected at this conference suggests that El Paseo is not a user friendly or pedestrian friendly road. Particular areas of concern include intersections along El Paseo such as Idaho and Missouri.

Road connections were a very popular idea among participants. Participants suggested connecting Utah Street and Wyatt Drive, and Idaho Avenue and Utah Street. They would also like to see several dirt paths, particularly the one behind Las Cruces High School, converted into trails for use by students and pedestrians. Participants envision an El Paseo Road that is easily accessible to anyone and everyone, regardless of their means of transportation.

- 34% Enhance pedestrian utility (curb cuts, wider sidewalk)
- 15% Bike lanes
- 9% Enhance/create trails
- 3% Street parking
- 3% More lanes
- 9% Raised walking bridge
- 9% Roundabouts at major intersections
- 18% Increased access on and off of El Paseo (road connections, i.e. connect Utah and Wyatt)

Landscaping
Landscaping can be used as a tool to create an aesthetically pleasing area that also utilizes stormwater conservation techniques and native plants to bring together utility with aesthetics. Landscaping accounts for 9% of the APA Conference data. Several suggestions were made including the use of tree walls, medians to separate on-coming traffic, and storm drains to control flooding.

- 45% Road medians
- 25% Tree walls along El Paseo Rd.
- 25% Storm drains
- 5% Irrigation fields

Attractiveness/Visibility
Attractiveness and visibility account for 18% of the data collected. Participants would like to see El Paseo Road transform into a stylish pathway from University Avenue to downtown. A common suggestion from most participants was to create an El Paseo corridor which resembles the Nob Hill area in Albuquerque. Lighting is also a significant issue and accounted for 22% of

the suggestions in this group. Participants would like to see uniform lighting down El Paseo in order to increase visibility while introducing organization or a kind of rhythm through the corridor. Attractive landscaping suggestions account for 33% of this group. These suggestions include moving buildings closer to the road, eliminating vacant lots, planting trees, vegetation or xeriscape along the roadway. Other suggestions include increasing public art and increasing the visibility of street addresses on buildings.

- 33% Landscaping
- 22% Lighting
- 11%Nob Hill look
- 11% Public Art
- 6% Focal points at major intersection (art)
- 6% Structure in front of Kmart
- 6% Visible street signs
- 5% Consistent street names

Buildings Style and Transportation

Building style and transportation suggestions account for approximately 21% of the conference data. Participants shared common ideas regarding building use. Many suggested the utilization of mixed use residential and business developments. Participants would also like to see uniformity among buildings along the El Paseo corridor. A few even suggested the creation of a tram/trolley system to go up and down El Paseo Road. Overall, participants would like to see a modernized El Paseo corridor with contemporary building developments and southwestern style single family and multi-family residences.

Transportation

- 50% Transportation: Quality public transit
- 50% Transportation: Trolley system

Building Style and Usage

- 25% Ground floor retail
- 13% Mixed use buildings
- 13% Even building lines (skyline)
- 12% Hotel on University and El Paseo
- 12% Low impact development
- 12% Multi family residence
- 13% Single family residence

Perspective Drawings Data

After analyzing the perspective drawing data, we found that most participants want the El Paseo corridor improved through the use of vegetation, accommodations for pedestrians and bicyclist, and mixed use buildings closer to the roadway. Many perspective drawings identified one or more of these elements. The perspetive drawings were a great tool to show how the community sees the future El Paseo.

The most frequent improvement seen in the perspective drawings was the incorporation of vegetation into the corridor. Participants want to see more trees, plants, landscaped medians, and other vegetated areas along El Paseo. About 22% of the requests were for more verdure.

- 13% of the requests specifically requested more trees, desert willows, catalpas and the most commonly requested, palm trees.
- 3% requested more plants, shrubs, and gardens and one creative participant suggested a rooftop garden.
- 6% percent specifically wanted the trees and plants to be located within the medians.

The next top requests were for pedestrian and bike friendly features such as bike lanes and paths, seating areas, and improved sidewalks. Pedestrian and bike friendly features accounted for 22% of the requests.

- 8% of participants would like to see more bike-friendly travel paths, with the majority (6%) wanting those lanes in the street and the rest hoped to see off-road bike lanes.
- 7% of participants requested seating areas such as benches.
- 7% of participants would like to see improvements made to the sidewalks.
- 4% would like the sidewalks widened and another 3% would prefer walking bridges to traditional sidewalks.

Requests for improving building use accounted for 17% of the requests. Participants would like to see more local businesses. One half of those requests were for local restaurants and coffee shops. Some requested residential apartments, multistory buildings (Mixed Use), and adding businesses in the Kmart and Video 4 Movie Theater Parking lot. Candy shops, community centers, florist shops, game stores, and art studios and galleries were only some of the requested shops participants wanted to see along the corridor.

Mapping Community Input

One way to show how the community would like to see El Paseo is to illustrate it on a map. This allows individuals to see their comments and the comments of others as it may be seen along the El Paseo corridor.

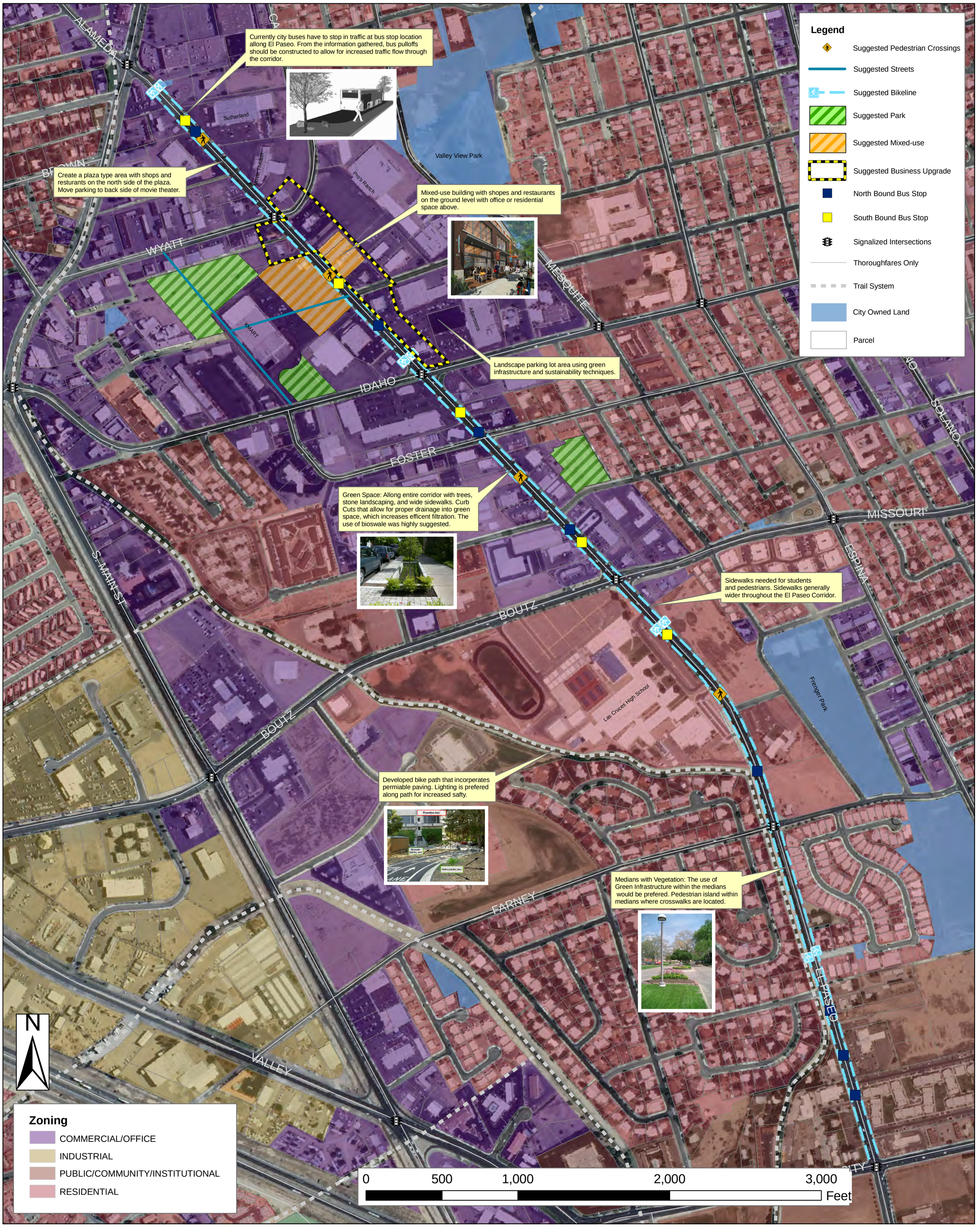
During community input sessions, participants gave detailed written comments and created visual representations of how they envision El Paseo. This information was represented using a "geographical information system" (GIS) to produce a small scale map and a number of large scale maps that depict the themes. The small scale map was created to show the overall view of the corridor and the elements which spatially encompass the entire El Paseo corridor (e.g. bike lanes, medians, etc…). The large scale maps were created to show detailed views of critical areas within the corridor (e.g. area between Idaho and Wyatt). The large scale maps show in greater detail what changes could be made to improve the area.

The ideas suggested by participants are represented on the maps by using point, line, or polygon features, or by using callouts to describe a particular theme. Some callout boxes were further characterized by images of that specific feature.

After determining the proper way to display the key themes and the proper scale, we then created the map and assigned colors, symbols or other aspects of the feature to best represent the key themes.

El Paseo Corridor Maps

The following maps depict the key themes determined through analysis of public input. The El Paseo corridor map shows the entire corridor with suggested key themes which indicate changes that the community wants to see throughout the entire area as well as critical areas of need. Images that represent suggestions are also shown on this map, such as mixed use buildings and bike paths. Three additional maps are included to show a detailed view of specific areas along the corridor. Comments and theme that are specific to these areas are shown.


Currently city buses have to stop in traffic at bus stop location allong El Paseo. From the information gathered, bus pulloffs should be constructed to allow for increased traffic flow through the corridor.
Create a plaza type area with shops and resturants on the north side of the plaza. Move parking to back side of movie theater.
Mixed-use building with shopes and restaurants on the ground level with office or residential space above.
Landscape parking lot area using green infrastructure and sustainability techniques.
Green Space: Allong entire corridor with trees, stone landscaping, and wide sidewalks. Curb Cuts that allow for proper drainage into green space, which increases efficent filtration. The use of bioswale was highly suggested.
Sidewalks needed for students and pedestrians. Sidewalks generally wider throughout the El Paseo Corridor.
Developed bike path that incorperates permiable paving. Lighting is prefered along path for increased safty.
Medians with Vegetation: The use of Green Infrastructure within the medians would be prefered. Pedestrian island within medians where crosswalks are located.
Legend
Suggested Pedestrian Crossings
Suggested Streets
Suggested Bikeline
Suggested Park
Suggested Mixed-use
Suggested Business Upgrade
North Bound Bus Stop
South Bound Bus Stop
Signalized Intersections
Thoroughfares Only
Trail System
City Owned Land
Parcel
Zoning
COMMERCIAL/OFFICE
INDUSTRIAL
PUBLIC/COMMUNITY/INSTITUTIONAL
RESIDENTIAL
N
0
500
1,000
2,000
3,000
Feet
ALAMEDA
BROWN
WYATT
IDAHO
FOSTER
BOUTZ
FARNEY
VALLEY
MESQUITE
MISSOURI
SOLANO
ESPINA
EL PASEO
S. MAIN ST
Sutherland
Movie Theater
Pro's Ranch
Valley View Park
KMART
Albertsons
Las Cruces High School
Frenger Park

Wyatt and Idaho

Existing

- North Bound Bus Stop
- South Bound Bus Stop
- Signalized Intersections
- Thoroughfares
- Parcel
- City Owned Land

Current Land Use

- Commercial/Office
- Residential

0 150 300 600 900 Feet

1:2,000

Legend

- Suggested Pedestrian Crossing
- Suggested Street
- Suggested Bikeline
- Suggested Vegitation
- Suggested Park
- Suggested Mixed-Use
- Suggested Revialization Area

Existing

- North Bound Bus Stop
- South Bound Bus Stop
- Signalized Intersections
- Thoroughfares
- Parcel

Current Land Use

- Commercial/Office
- Residential

Boutz and Idaho

0 150 300 600 900 Feet

1:2,000

Legend

- Suggested Pedestrian Crossing
- Suggested Green Space
- Suggested Bikeline
- Suggested Park

Note: Suggested data was gathered through public input sessions, professional conferences, or suveys.

N

Adam Tankersley: City of Las Cruces, CD

Existing

- North Bound Bus Stop
- South Bound Bus Stop
- Signalized Intersections
- Thoroughfares
- Parcel
- City Owned Land

Current Land Use

- Commercial/Office
- Residential

El Paseo at Las Cruces High School

0 150 300 600 900 Feet

1:2,000

Suggested

- Pedestrian Crossing
- Vegitation Along Roadway
- Bike Lane
- Trail System

N

NOTE: Suggested changes to the El Paseo Corridor were gathered through public input session, professional conferences, and surveys.

Adam Tankersley: City of Las Cruces CD

Vision Statement

The outcome this project was to draft a preliminary vision statement that encompasses the overall ideas gathered through the visioning process where key themes were established. The preliminary vision statement describes the look and feel of the future El Paseo corridor. It compiles all the ideas, thoughts and suggestions of those who participated in the process into a brief, but concise vision:

> *The El Paseo Corridor is a neighborhood built on shared ideas and a common desire for safety, economic growth and healthy living. It is a hot spot for local shopping, eateries, and businesses, as well as a destination for everyone to visit and enjoy.*
>
> *El Paseo Road is a thriving transit-oriented area where businesses, residents, visitors and the City work together to create a place of sustainability, one that is pedestrian and bicycle friendly and addresses the needs of all citizens.*

Acknowledgements

We would like to thank Dr. Diane Prindeville, Dr. Christina Medina, Dr. Don Kurtz, and Ms. Carol McCall for giving us this opportunity. We thank Dr. Prindeville for pushing us to work hard and for always believing in us and our work. Thank you Don for allowing us to work with you, as partners with your organization the IFCE. Dr. Medina, thank you for agreeing to take on yet another internship, special project, and also for allowing Chris R. the opportunity to work with us as part of your Qualitative Methods class. Last but certainly not least, a big THANK YOU to Carol McCall for your patience, professionalism, and for allowing the intern team the freedom to be creative and have fun with this project. Your guidance and knowledge was an essential aspect and we could not have completed this report without you.