Visitor Interpretive Experience Plan

Valle de Oro NWR

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Acknowledgments

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Cover photo by Deanna Nichols

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Background

Definitions

The following are brief definitions for terms used in this plan. More detailed definitions for the terms can be found in Appendix A.

Visitor Interpretive Experience Plan: A plan that uses a visitor experience approach to determine the interpretive opportunities to develop. The approach also helps identify orientation and wayfinding information needs, and other actions necessary to develop high quality visitor interpretive experiences.

Visitor: A person who physically visits the refuge or features developed off-site such as Island of Habitat, or a person who visits virtually through a website or other digital channel.

Urban Wildlife Refuges: Refuges established or designated because of the higher probability of reaching urban audiences due to proximity to concentrations of population. If established, as is the case with Valle de Oro, the primary purpose is to use development of the refuge as a tool for developing a Connected Conservation Community rather than protect critical habitat.

Stepping Stones of Engagement: An array of opportunities that afford visitors a myriad of pathways to move from their current connection with nature, to a strong connection with native flora and fauna.

Native Nature: Biota that evolved in an area and therefore are native to that location. This term avoids being forced to label different types of nature as 'good' or 'bad.'

Transition Zones in Refuges: Areas within refuges designed to create a transition from land that is more reflective of human use to land that is more natural and more reflective of the refuge's mission. This zone typically is small, and includes such features as parking areas and visitor centers.

Information Network Approach: People commit time conditionally, and typically in increments. Consequently, the interpretive network uses an array of interconnected interpretive opportunities that allow a visitor to engage in small increments at a time.

Developing the VIEP

This Visitor Interpretive Experience Plan (VIEP) focuses on identifying and conceptualizing the network of orientation, wayfinding and interpretive opportunities to create and facilitate visitor *interpretive* experiences associated with Valle de Oro National Wildlife Refuge (NWR), which are visitor experiences with a significant interpretive component. All visitor interpretive experiences do not have to occur on the refuge itself. For example, people encountering Pollinator Gardens or Butterfly Gardens in public areas planted through partnerships between the USFWS and others are considered visitors and could have a complete visitor interpretive experience associated with that feature.

The Continuums Used to Develop the Plan

Developing the VIEP for Valle de Oro NWR was based on the framework described in the previous section, and on moving people along two continuums – the Continuum of Active Involvement in Conservation, and the Continuum of Experiences in Native Nature, which moves from an urban environment where a built environment dominates to a natural environment where Native Nature dominates.

Continuum of Active Involvement in Conservation

One of the goals for the refuge is for visitors to experience nature in ways that make them more aware of and comfortable with (less afraid of) Native Nature, motivates them to actively support the refuge, and inspires them to engage in other acts of stewardship regarding natural resources both individually and as part of a Connected Conservation Community. Consequently, the interpretive opportunities selected help move people along a continuum of valuing Native Nature in urban (and non-urban) environments as part of their quality of life, and also motivates them to take actions reflecting stewardship, such as by developing natural landscapes.

Continuum of Experiences in Native Nature

Ultimately, the desire is for visitors to have interpretive experiences associated with Valle de Oro NWR that lead to a never-ending string of experiences in natural areas, helping to establish Native Nature as a valued part of a visitor's lifestyle. Not all visitors will venture all the way along the continuum of experiences, but they should always have the opportunity to go further. That goal dictates the following:

- Every interpretive experience should include marketing additional interpretive experiences;
- The Visitor Center should function as a portal into the more natural parts of the refuge;
- The sequence of experiences at the refuge should progress from environments dominated by built features with some Native Nature to environments dominated by Native Nature with minimal built elements;
- Valle de Oro NWR as a whole should function as a portal to other areas that provide experiences in Native Nature, including other local open space and public lands, and ultimately other refuges, which offer experiences more immersive in nature than can be had at the refuge because of the difficulty escaping stimuli originating in a built environment, such as views of buildings and the sounds of traffic and airplanes.

Assumptions

Most plans of this type are prepared for established sites, which, by way of developed infrastructure and natural and cultural features, define the framework for an interpretive program. The natural and cultural features dictate what stories and messages can be effectively communicated and the existing trails, roadways and facilities define what features are most accessible and the sequence in which they are likely to be encountered. In the case of Valle de Oro NWR, the actual refuge habitat and infrastructure do not yet exist. The land is still essentially an old agricultural field with a few buildings associated with the previous agricultural function of the land. This creates issues when developing an interpretive program about wildlife, conservation, natural areas and refuges since interpretation works best when it focuses on existing features, of which there are few relating to those topics. Consequently, the features to be developed and the type of access corridors (trails) must either be assumed or dictated in order to complete the plan. Although developing a Visitor Interpretive Experience Plan for Valle de

Oro NWR is challenging because of the lack of features and access corridors on the site, the lack of such parameters also means that interpretive opportunities do not have to be retrofit into an existing refuge that may not have been planned with interpretation as a key feature, and allows the Refuge to develop its features while comprehensively considering the purpose behind them, including how they should be interpreted.

A VIEP would typically be a step-down plan from the CCP, and developed prior to or concurrently with a VSP because it identifies the strategies for *Standard 7: Interpretation* in that document. However, neither a CCP nor a VSP has been completed, so this plan had to be developed based on the Environmental Assessment for the site, probable habitat restoration and other activities likely to occur, and the following assumptions:

1. The habitats on the refuge will represent the major habitats found in the Middle Rio Grande area, including riparian (bosque), wetlands, grassland, and upland habitats.
2. The initial on-site focus will be on programs for school youth (including college) because of the general lack of visitor opportunities.
3. As an Urban Wildlife Refuge, some interpretive experiences may occur entirely off-site and function as Stepping Stones of Engagement.
4. A focal point of interpretation during the next decade will be on the continuum of the process of developing mature habitat, and the associations between habitat and wildlife. Ideally, as habitat matures, native birds and wildlife associated with the habitat will start using it.
5. Other focal points for interpretation will be the cultural importance and value of the mature habitat being developed, including the value of the habitat to personal and community health, and the associations between habitat, wildlife and people. The focus on value will be from the perspective of the residents of the Albuquerque area.
6. Youth employment is an essential part of the refuge operation on and off the refuge because it involves hiring local youth. As noted by Lamar Gore, Refuge Manager at John Heinz National Wildlife Refuge in Service, in Best Practices for Creating and Sustaining Engagement with Urban Communities: Recommendations for the U.S. Fish and Wildlife, "People want to see their kids working. We see them respond to us keeping their kids off the street, their eyes light up."

Introduction

The Refuge

Valle de Oro NWR, established in 2012, is the first Urban NWR in the Service's Southwest Region (New Mexico, Texas, Oklahoma, and Arizona), and the first established under the Service's Standards of Excellence for Urban National Wildlife Refuges. One major purpose of refuges designated as Urban Wildlife Refuges is to work with community partners to reconnect urban residents to nature, and build a Connected Conservation Community. Urban Wildlife Refuges have been designated because they are near population centers, creating a better opportunity to work with community partners to attract non-traditional urban audiences with the intention of engaging them physically, intellectually and emotionally in ways that help reconnect them with nature.

The refuge, comprised of 570 acres that was formerly Price's Dairy and Valley Gold Farms, is located primarily between 2nd Street SW and the Rio Grande in Albuquerque's South Valley in Bernalillo County, New Mexico. To the west, the refuge is bordered by the Rio Grande riparian / river forest (bosque), which is part of the Rio Grande Valley State Park. Homes within the Mountain View neighborhood border the refuge to the north and south, and an industrial area borders the refuge to the east. Because of its location within the Albuquerque urban area, the refuge is well situated to serve the residents of the Albuquerque area.

Valle de Oro National Wildlife Refuge   **Image courtesy of USFWS**

The primary goal for the acquisition of the property was "*to protect the land and water needed to provide refuge visitors from a large urban area with an understanding and appreciation of fish and wildlife resources through environmental education and interpretation and through wildlife-dependent recreational experiences and to improve the ecological integrity of the Middle Rio Grande ecosystem.*"

Specifically, the goals for establishing the refuge were to:
- Foster environmental awareness through environmental educational opportunities and outreach programs;
- Expose an urban population to the larger NWRS;
- Develop an informed and involved citizenry that will support fish and wildlife conservation;
- Expand outdoor recreational opportunities in proximity to the trail system in the Rio Grande bosque;
- Conserve and enhance the natural resource values that may have been degraded or lost through conversion of the site to other uses, including the protection of senior water rights associated with the site;
- Capitalize on the Service's partnerships with Bernalillo County, AMAFCA, NMSLO, MRGCD, and USBR to achieve shared goals.

The Visitor Interpretive Experience Plan (VIEP)

People today buy *experiences*. Consequently, the desired product to guide development of an interpretive program is a Visitor Interpretive *Experience* Plan (VIEP), which uses desired audience experiences as the frameworks for determining the network of interpretive, outreach, orientation, wayfinding, and trip planning information to develop, and other actions to take to facilitate those experiences.

The VIEP provides a blueprint for developing a complete information network to support visitor interpretive experiences at (and associated with) Valle de Oro National Wildlife Refuge. The recommended information network begins with reaching your target audiences where they are – physically, emotionally and intellectually – and taking them where you want them to go by using a linked combination of trip planning information, orientation, wayfinding and interpretive opportunities.

Because a visitor experience approach was used, other potential issues that negatively impact the visitor interpretive experiences, barriers to the desired experiences, such as facilities that aren't fully accessible, were identified, resulting in recommendations of other actions to take.

What Interpretation can and cannot do

A major goal of Urban Wildlife Refuges is to create a Connected Conservation Community. It's not enough for residents to simply value the resource; they need to take actions to help restore and protect the resource, and/or to support the efforts of the USFWS. Motivating people to take action of this kind generally requires caring about whatever they are restoring or protecting, or caring about the USFWS, to the point that the personal benefit they derive from their actions is worth the time and effort they expend. In this case, the key is for residents to care about native flora and fauna in urban areas. Interpretation can help that effort by creating strong positive emotional, intellectual and physical connections with nature, the refuge and its inhabitants. It can also help facilitate the physical transition

of residents from urban areas to natural areas by stirring curiosity and interest while removing some of the barriers that obstruct visitation, such as fear of nature.

However, it is not the interpretive opportunities by themselves that are going to attract visitors, but the actual experiences they can have that provide the attraction power. Interpretation can add value and create the desired connections through the course of that experience. For example:

- When an urban visitor hears a bird call and asks, "What bird is making that call?" it is interpretation that can provide the answer.
- Interpretation can transport people into the past where they can 'visit' the Camino Real de Tierra Adentro when it was a major travel corridor.
- Interpretation can reveal key concepts, such as the critical relationship between wildlife and habitat, which are crucial to achieving the goals of the refuge.
- Interpretation can reveal the relationship between a healthy ecosystem and quality of life while also revealing the interconnectedness between biological organisms in an ecosystem.
- Interpretation helps connect people's lived experiences with nature to other interrelated concepts, behaviors, and physical locations that motivate people to engage in stewardship of natural resources.

In sum, the role of interpretation is to help forge strong emotional and intellectual bonds between the natural world and people, and to attract people to the natural world where they can also form strong positive physical bonds through personal experience.

Although interpretation can be a key tool in helping achieve the goal of a Connected Conservation Community, it will not, *by itself* achieve significant progress on that front. As noted in the book, *Fostering Sustainable Behavior* by Douglas McKenzie-Mohr, numerous studies show that education alone has little or no effect on sustainable behavior. In other words, the interpretive and environmental education programs are important tools to cause the desired outcomes, but by themselves are unlikely to cause a significant shift in the level of conservation in the community unless barriers that increase the difficulty of engaging in the desired behaviors, such as lack of transportation to the refuge, are reduced or eliminated. That requires a different set of actions.

Vision / Goal Hierarchy

Introduction

This section focuses on the drivers of the Visitor Interpretive Experience Plan – the Vision and Goals for the project. The basic logic model used in developing the goal hierarchy for Valle de Oro NWR has 3 primary elements – Outputs, Outcomes and Impacts. As shown below, **Outputs** (what the USFWS does) cause **Outcomes** (impacts on knowledge, attitude and/or behavior of the audience), which result in **Impacts** on the resource or agency. The Impacts on the resource or agency help achieve the overall Management Goals, and consequently, the overall Mission/Vision of the USFWS for Valle de Oro NWR.
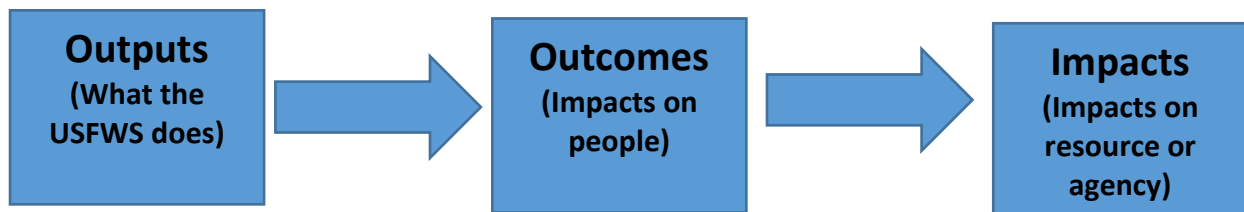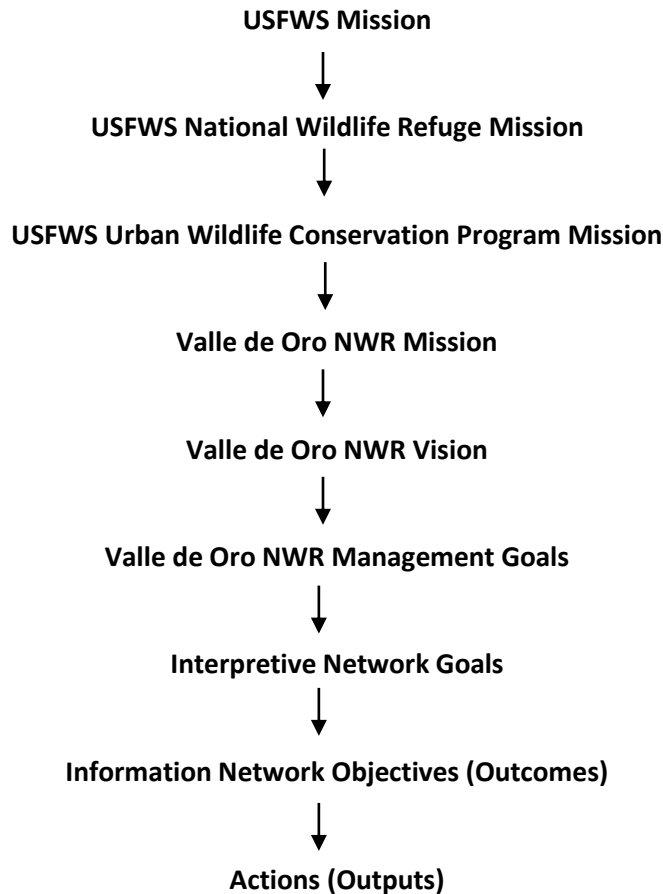

The purpose in using this model is to ensure that the Interpretive Program and all the visitor opportunities developed for that program make progress towards achieving the overall mission of the refuge, and by extension, the mission of the USFWS.

Valle de Oro VIEP Goal Hierarchy

This goal hierarchy for the VIEP reflects the Urban Wildlife Refuge Initiative Programmatic Logic Model, modified to match the terminology adopted by the USFWS and other institutions as a result of the 2007 Definitions Project. The VIEP takes its direction (**Interpretive Program Goals**) from the **Management Goals** for the refuge, which reflect how the USFWS intends to achieve the **Vision/Mission** for the refuge. The Measurable Objectives are the **Outcomes** that reflect impacts on the behavior, knowledge and attitude of the target audience, which, if achieved, result in achieving the Interpretive Program Goals. The media prescription and associated actions in the Action Plan that are identified near the end of this planning process are the **Outputs** by the USFWS that are the tools for achieving the desired impacts on target audiences.

The structure of the goal hierarchy depicted on the next page reflects several significant aspects of the hierarchy. First, everything stems from the USFWS mission. Second, the statements at each level, whether goals, missions or visions, are derived from the statements at the level above. Determining each set of statements requires asking the question, "how can achieving a goal at this level help achieve the goals at the next level up?" For example, the specific mission of Valle de Oro NWR can be determined by asking, "How can Valle de Oro NWR help achieve the USFWS Mission?" The connection between all levels provides the planner with tools for identifying each level of goals, and for defending those goals. Finally, the structure clearly shows the link between the purposes for which the refuge is managed and the recommended actions associated with developing a network of interpretive opportunities to help create visitor interpretive experiences.

Goal Hierarchy Structure

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USFWS Mission

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USFWS National Wildlife Refuge Mission

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USFWS Urban Wildlife Conservation Program Mission

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Valle de Oro NWR Mission

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Valle de Oro NWR Vision

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Valle de Oro NWR Management Goals

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Interpretive Network Goals

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Information Network Objectives (Outcomes)

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Actions (Outputs)

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The following are the elements in the hierarchy, arranged in descending order, that drives the development of visitor interpretive experiences. The exceptions are the Actions (Outputs). Those are the recommendations appearing at the end of this plan.

U.S. Fish and Wildlife Service (USFWS) Mission

It is important not to forget that this is a National Wildlife Refuge managed by the USFWS, an entity with a mission:

> *The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.*

Every action the USFWS takes, including at Valle de Oro NWR, should in some way support and make progress towards that mission. Working with others to create a connected conservation community who values nature enough to take an active role in helping conserve and restore natural habitat supports and makes progress towards that mission.

USFWS National Wildlife Refuge Mission

The mission of the National Wildlife Refuge system is "to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans."

Urban Wildlife Conservation Program Mission

The mission of the Urban Wildlife Conservation Partnership Program is to *". . . create a connected conservation community by providing inspiration and opportunities for urban residents to find, appreciate, and care for nature in their cities and beyond."*

Valle de Oro NWR Mission

As one of the newly designated urban refuges, Valle de Oro is charged with helping to achieve the NWR mission by conserving / restoring native plants and wildlife, while also engaging the local community in a way that leads eventually to those residents becoming active stewards of natural resources and supporters of conservation in general and the USFWS specifically. In short, Valle de Oro NWR will help achieve the USFWS mission by accomplishing the following:

1. Restore wildlife and plants native to the middle Rio Grande Valley ecosystems in order to highlight the diversity of habitats and wildlife that were historically present in the area.
2. Create a connected conservation community within the Albuquerque, NM urban area, who actively supports conservation, the USFWS, and the refuge system.

Valle de Oro NWR Vision

The following 'vision' for Valle de Oro NWR was derived primarily from answers to the question, "What does Valle de Oro NWR look like in 20 years?" posed to participants at the kick-off meeting for this project. Responses were compared to vision-type statements from previous planning efforts to ensure consistency.

Habitat restoration efforts over the previous 20 years have resulted in a collection of habitats historically present within the area, ranging from a historically similar Middle Rio Grande riparian habitat (bosque) with associated wetlands, to adjacent Chihuahuan and high desert upland areas. The restoration of these native habitats has resulted in an increase in the diversity of native wildlife – both migratory and resident – associated with these habitat types.

The refuge functions not only as a home to native wildlife and plants, but continues to serve as an important route for stormwater runoff from the surrounding neighborhood, thus helping reduce the impact of flooding on the local community. The refuge wetlands and the AMAFCA swale also serve the important function of filtering and cleaning water before it reaches the Rio Grande bosque, thus improving the native habitats of the bosque southwest of the refuge.

People of all cultural and social groups in the Mountain View Community, South Valley, Greater Albuquerque area, and near-by pueblos, including both traditional and non-traditional visitors – have

embraced one or more Stepping Stones of Engagement as valued parts of their lifestyle, and have a positive emotional and/or intellectual connection with Native Nature, the refuge and the USFWS.

Visitors to the refuge feel welcome and safe, and visit frequently for a variety of reasons, such as:
- *Walking through restored habitat enjoying the native plants and associated wildlife;*
- *Observing and photographing wildlife;*
- *Using self-guided interpretive trails and the associated interpretive opportunities;*
- *Attending community, family and social events;*
- *Attending public meetings;*
- *Taking part in interpretive programs, guided walks, school field trips, environmental education opportunities, and after-school programs;*
- *Gathering with friends and neighbors to socialize;*
- *Working on Citizen Science and school projects;*
- *Hanging out to simply enjoy the natural setting;*
- *Volunteering;*
- *Taking advantage of employment opportunities for youth.*

Regardless of whether residents visit the refuge or enjoy one of the Stepping Stones of Engagement along the way, they value the refuge highly as a part of the local community, both for the positive impacts on stormwater runoff and water quality, and for the opportunities it provides that are a part of the quality of life they enjoy, both on and off the refuge. They also value the refuge staff and volunteers for the work they do outside the refuge in the community, and for projects and programs the refuge supports that benefit the community, such as the Youth Conservation Corps, La Plazita Institute Barrio Youth Corps and Rocky Mountain Youth Corps that employ local youth, educational programs and opportunities within and outside schools for their youth, and job fairs. Local urban residents are aware of, visit and actively support the larger network of USFWS refuges and other local open space sites that engage in conservation of migratory and resident wildlife.

The residents of the surrounding communities feel valued by the refuge and USFWS because of the positive response by the agency to the needs of the Mountain View community, the South Valley, Albuquerque and nearby pueblos, from a need for technical knowledge to a need for nature-based recreational and educational opportunities, and job skill training for their youth. They also feel valued, respected, and listened to when providing input on decisions. They understand USFWS decisions due to the transparency of the agency and their involvement in the process. As a result, restoration projects within the refuge and outside its borders, such as planting and caring for 'Islands of Habitat' in the community, are well supported by residents.

The refuge has a strong partnership with area schools. All schoolyards in the Mountain View community, South Valley, and Greater Albuquerque area have planted, with the help of the USFWS, 'Islands of Habitat' where native vegetation is attracting birds and wildlife. Teachers regularly use these Island of Habitat in association with curricula developed with the help of refuge staff and residents. The refuge enjoys frequent use from local schools for field trips, environmental education opportunities, Citizen Science projects, and research projects. In addition, the refuge offers programs where school students from middle and high school and local colleges serve as interns at the refuge, gaining training and experience in conservation job skills. USFWS staff and volunteers present programs within the schools on a regular basis.

Two decades of such presentations, the use of Islands of Habitat by teachers for lessons, intern programs and other opportunities has resulted in residents highly valuing Native Nature in urban areas, a significant increase in active support for conservation, and participation in conservation projects.

Through work with residents, the City, and local businesses, Islands of Habitat are also found in backyards, parks and other public places, and in the landscapes of private businesses. The abundance and variety of these Islands of Habitat contribute to the increase in populations of native fauna.

The Friends Group has expanded and thrived over the last 2 decades, working hand-in-hand with USFWS staff to shape and support the development of the refuge of the future in a multitude of ways, including:

- *Acting as a liaison with the community and its needs;*
- *Raising money to pay for buses and supplies for field trips and special events;*
- *Hosting unique fundraising opportunities that raise money and awareness about and for the refuge;*
- *Purchasing advertising and supporting events;*
- *Conducting outreach and advocacy efforts; and,*
- *Building partnerships and fostering stakeholders.*
- *Coordinating a Backyard Habitat program for local residents*

They actively foster a community conservation ethic by promoting environmental and cultural awareness through public educational programs and recreational opportunities. They now have an active Junior Friends Group made up of high school and college students. Volunteers are in abundance as the refuge is a place that highly values volunteers and shows it through setting aside space for them, honoring them, and engaging in other actions that clearly demonstrate that they are a highly valued resource.

Interpretive Network Goals

Ultimately, a major goal associated with the interpretive program at this refuge, based on the fact that it is a designated Urban Wildlife Refuge, is for residents in the Albuquerque area to take an active role in restoring and conserving native flora and fauna, and to actively support Valle de Oro NWR and the USFWS specifically, and the NWR system in general. That means residents must first recognize the importance of Native Nature in providing quality of life and health benefits to themselves and others in their community. Another goal is for people to actively support the actions of the USFWS, which requires valuing nature and recognizing that Valle de Oro NWR specifically, and the USFWS in general, provides and protects the nature that they value.

Interpretation plays an important role in achieving these goals by causing impact on knowledge and attitudes that lead to motivation to engage in pro-environmental actions. However, behavioral change depends on more than information. Research shows only a weak correlation between pro-environmental attitudes and associated behaviors. Actually causing behavior change on a large scale also depends on minimizing or eliminating barriers to the desired behaviors. For example, if the refuge provided actual native plants to plant, or seeds for a pollinator or butterfly garden the barrier of cost

and of time needed to go to a business to purchase these items is eliminated, which is likely to cause a significant increase in the % of visitors planting those plants or seeds.

In short, achieving the goal of increasing pro-environmental actions and support for the USFWS requires the following:

- Potential visitors must be aware of the refuge and that it offers visitor opportunities that they find attractive so they are motivated to consider a visit (impact on knowledge).
- Barriers to visitation, such as lack of transportation, must be minimized or eliminated (increased likelihood that residents will visit the refuge).
- The initial experience must be favorable in order to motivate repeat visitation and take advantage of social selling (impact on behaviors – repeat visitation and encouraging others to visit the refuge).
- Residents must see the refuge and the USFWS as assets to the community, which means that the USFWS needs to provide services and opportunities that *residents* value (impact on knowledge and attitudes).
- Visitors must value Native Nature to the point that they are willing to take actions to conserve natural resources (impact on attitudes).
- Barriers to visitors taking desired conservation actions, such as lack of money, lack of transportation and other factors, must be minimized or eliminated (impact on desired behaviors).

The following Interpretive Goals and Objectives focus on what can be achieved by the Interpretive Network alone, which is significant impact on knowledge and attitudes, and a much more modest impact on behavior. Potential barriers for achieving goals and objectives, and actions that can be taken by the USFWS to minimize or eliminate those barriers, are also noted. This assumes that removing or minimizing the behaviors will significantly increase the % of visitors taking desired actions. The latter are not based on actual research on the residents of the Albuquerque area, but rather on using past experience and knowledge to identify probable barriers.

Overarching Interpretive Program Goal

Through engaging visitors in a variety of interpretive opportunities focused on creating a Connected Conservation Community, the goal of the interpretive program as a whole is as follows:

To achieve a significant increase in the number of people who take action to restore and protect native habitat and its inhabitants within and outside the urban environment. Doing so requires fostering positive personal emotional, intellectual and physical connections between the public and native flora and fauna to the point that they consider them an important part of their quality of life. A more significant increase in desired behaviors can be achieved by eliminating barriers that visitors must overcome to engage in the desired behaviors.

Success depends in part on seeing Native Nature in the urban area as a key part of their quality of life rather than something that is 'nice' but not essential. Valuing is a critical precursor to supporting the USFWS as a manager and protector of Native Nature, volunteering for restoration efforts, engaging in stewardship behaviors, and becoming an active participant in a

Connected Conservation Community. Although the residents could come to support the USFWS because it provides services they value, if the residents don't value the natural world (native flora and fauna) and understand that it is endangered and needs protection, they won't become a Connected Conservation Community, which means that Valle de Oro NWR would fail in its mission as an Urban Wildlife Refuge.

Interpretive Network Goals and Objectives

The following Interpretive Network Goals and Objectives, if achieved, should result in achieving the Overarching Interpretive Program Goal. The first three goals are linked because they address the need to have people visit the refuge. The first addresses the barrier of lack of awareness of the refuge and what it offers visitors, and the second and third goals address other factors that have been identified as barriers to visitation and engagement. The remaining goals focus on outcomes from engaging with interpretive opportunities. Measurable objectives for Interpretive Program Goals 1a, 1b, and 1c can be found under Interpretive Program Goal 1c.

> **Interpretive Program Goal 1a:** Awareness among residents of the refuge and what it offers in terms of visitor opportunities that would motivate them to visit will increase significantly.

Lack of awareness of refuges along with lack of awareness that refuges offer attractive visitor opportunities are common barriers to visitation and engagement at such sites. Both of these can be addressed by an effective information/interpretive outreach network and other actions that strive to invite visitors to the refuge and make them feel welcome.

> **Interpretive Program Goal 1b:** The perception among urban dwellers that areas dominated by nature (the natural world as opposed to manicured nature) are to be feared will be significantly reduced, to the point that they are comfortable visiting the refuge, other wildlife refuges and similar areas.

Reducing fear of nature is likely to require both increased knowledge of nature (reducing fear of the unknown) and gaining a familiarity with nature through repeated exposure. Valle de Oro NWR is a good place for urban dwellers to begin familiarizing themselves with the natural world because the built environment is close at hand and will likely be visible from any point on the refuge. In this way, the refuge could function as a portal into other nearby National Wildlife Refuges and natural areas where the natural environment is more dominant.

Note: Some of the fear residents have of natural areas is not because they are natural, but rather that they are unpatrolled, which brings an expectation of increased crime. The interpretive program is not the vehicle for addressing this issue because the USFWS cannot control crime levels in natural areas that appear to be similar, but are not managed by the agency.

> **Interpretive Program Goal 1c:** The perception among urban dwellers that USFWS staff are to be feared will be significantly reduced.

Another barrier to engagement, on or off the refuge, and at other National Wildlife Refuges, is the perception among some groups of people that the USFWS staff, when in uniform, are, or will function as, Border Patrol agents who are responsible for deportation and other law enforcement. Information / interpretation is limited in what it can do to reach this goal. The major factor will be familiarity with the uniform to the point that people can distinguish it quickly from the uniforms of other federal officers, and familiarity with the people wearing the uniform and what they do. This will require USFWS staff going out *into* the urban areas rather than waiting for people to visit, and engaging in activities that benefit the community, which is not typical behavior of Border Patrol agents.

Objectives for Goals 1a, 1b, 1c

Note: Research indicating possible impacts of interpretive efforts is lacking, and what research is available indicates weak correlation between environmental knowledge / attitudes, and environmentally conscious behaviors. Consequently, it is difficult to distinguish whether the quality of interpretive opportunities and/or barriers to the desired behavior are to be blamed for apparent lack of impact by interpretive strategies. Consequently, the numbers included in the objectives are not based on actual research, but rather by a desire not to be satisfied or feel as if the time and money spent on interpretive opportunities if the level of achievement is relatively small.

As a result of engaging in the information/interpretive network, especially outreach elements of the network:

Objective 1-1: 75% of residents of the Albuquerque Metropolitan area will be *aware* of the existence of the refuge, that it is open for visitors, and that it offers interesting visitor opportunities. This will rise to 90% after two years.

> **Potential Barriers that cannot be addressed by information:** Since this is essentially targeting changes in knowledge, most, if not all, barriers can be addressed by the interpretive/information network.

Objective 1-2: 15% of residents of the Albuquerque Metropolitan area will visit the refuge at least once in the year after strategies to increase awareness and interest are implemented. This will rise to 25% in the first two years. (Note that the carrying capacity of the refuge must be considered when determining what represents a reasonable objective.)

> **Potential Barriers that cannot be addressed by information:** For some residents of the area, particularly poorer residents, transportation will be a barrier. For those same people, cost might be an issue if the refuge charges a fee for visiting. This will be a more significant barrier to those who prefer to visit such sites in large family groups. Time required to travel to and from the refuge can be a barrier to those who live in areas of Albuquerque that are the furthest from the refuge.

Objective 1-3: 15% of residents in the Mountain View community will visit the refuge more than once in the year after strategies to increase awareness and interest are implemented. This will rise to 30% in the first two years.

Potential Barriers that cannot be addressed by information: For this target audience, transportation and cost may be significant issues.

Objective 1-4: 75% of visitors to the refuge will engage with at least one interpretive opportunity on the refuge.

> **Potential Barriers that cannot be addressed by information**: Language barriers and mobility issues are potential barriers, but these can be addressed through design and location of interpretive opportunities.

Objective 1-5: 50% of visitors to the refuge will engage with two or more interpretive opportunities on the refuge.

> **Potential Barriers that cannot be addressed by information**: See potential barriers noted for Objective 1-4.

Objective 1-6: 20% of visitors will visit other wildlife refuges and natural areas within one year after visiting the refuge.

> **Potential Barriers that cannot be addressed by information**: Awareness of Bosque del Apache, Sevilleta and Maxwell National Wildlife Refuges, and similar natural areas, can be addressed by the information network. However, lack of transportation can be an issue.

Interpretive Program Goal 2a: The level of stewardship behaviors practiced by residents will increase significantly.

Interpretive Goal 2a and 2b both involve actions by residents. Goal 2a focuses on actions not associated with the refuge, such as recycling and landscaping with native vegetation. Goal 2b focuses on actions that directly benefit the refuge. Achieving both goals requires two separate but connected focal points for action by the USFWS. The first focuses on motivating people to take action, which typically involves increasing the personal value of the natural world by urban dwellers to the point that they are willing to spend time and effort restoring and conserving nature, raising awareness of the need for practicing stewardship to conserve those resources, and identifying stewardship behaviors that residents can practice. That can be addressed by the interpretive program.

The second focal point for actions by the USFWS is to reduce the barriers to engaging in stewardship behaviors. For example, the interpretive program can motivate residents to use native vegetation in landscaping their yards, but the cost of native plants may be a deterrent. Working with a local nursery to make native plants affordable can minimize that barrier. It is beyond the scope of this contract to identify barriers to action that, if minimized or eliminated, would result in visitors actually engaging in the desired behaviors. Consequently, the potential barriers to action listed for each objective are based on what the contractor has gleaned from this and other projects. That is not a substitute for an actual study to identify barriers to action that pertain to these target audiences.

Objectives

As noted above, the % of visitors who engage in desired behaviors associated with the goal depends on whether barriers to specific stewardship behaviors have been eliminated, in which case the increased motivation should be reflected in increased levels of stewardship behaviors. If not, the most that can realistically be hoped for with just interpretation would be a significant increase in motivation. The following objectives focus on what *can* be achieved just through interpretation, with notes on potential barriers that could be addressed that would result in actual behaviors.

Objective 2a-1: 50% of residents of the Albuquerque Metropolitan area who visit the refuge will be motivated to plant at least one native plant in their yard during the year following their visit. If barriers are identified and minimized, this could result in 25% of visitors actually planting native plants.

> **Potential Barriers that cannot be addressed by information**: One potential barrier is lack of knowledge of planting and plant care, which can be addressed in part by the information network. It might be more effective if the refuge also offered an opportunity to learn how to plant. Other barriers include the cost of plants.

Objective 2a-2: 10% of residents of the Albuquerque Metropolitan area who visit the refuge will participate in planting and maintaining Islands of Habitat in the community within the year following their visit.

> **Potential Barriers that cannot be addressed by information**: Time might be an issue if it required time during the day, which is typically when residents have to work, so the timing of the project is important.

Interpretive Program Goal 2b: Participation in volunteer activities to support the refuge will increase significantly.

Objectives

Objectives depend on the types of volunteer opportunities available to visitors. The following are possibilities.

Objective 2b-1: The volunteer pool from the local residents of the Albuquerque Metropolitan area will increase by 10% a year for 5 years.

> **Potential Barriers that cannot be addressed by information**: Time required for participating, and transportation to the location where volunteers are needed, will be issues for some. Timing of opportunities to volunteer may also be an issue if they are scheduled during typical work hours.

Objective 2b-2: Participation of residents of the Albuquerque Metropolitan area in work parties to create / restore / manage the refuge will increase by 10% a year for five years.

> **Potential Barriers that cannot be addressed by information**: Transportation and time will be barriers to some. Timing of opportunities to volunteer may also be an issue if they are scheduled during typical work hours

Objective 2b-3: Donations to the Friends group will increase by 10% a year for the next 5 years.

> **Potential Barriers that cannot be addressed by information**: This is likely to be a money issue for many residents if donations are restricted to money. Expansion of the term to include labor and materials may make donating easier for some, but still a barrier to many.

Objective 2b-4: Membership in the Friends group by residents of the Albuquerque Metropolitan area will increase by 10% a year for the next 5 years.

> **Potential Barriers that cannot be addressed by information**: Requirements such as volunteering time and fees for joining will be an issue for some.

Note: Ideally the diversity of the Friends Group and of volunteers would reflect the surrounding metropolitan area, but it is more likely that it will reflect the distribution of wealth due to the requirements of time and/or money for belonging to the Friends Group. However, it is still a worthy goal that deserves consideration.

> **Interpretive Program Goal 3:** Awareness of, appreciation for, and active support for the work of the USFWS in restoring and conserving nature within and outside the urban area will increase significantly.

This differs from Goals 1 and 2 in that it focuses on the agency, not the site. Achieving this goal requires that visitors understand that the USFWS is largely responsible for services, visitor opportunities and other activities that they value. This should result in residents considering the USFWS as an asset to the community. If people value Native Nature in urban areas, and they are aware of the role of the USFWS in restoring and conserving nature in their communities, it is more likely they will appreciate and support the USFWS.

Objectives

Objective 3-1: One year after implementation of the first phase of development of the information network identified in this plan, 50% of residents of the Albuquerque Metropolitan area will be aware of the refuge, that it is a refuge and not a park, and will be able to name the USFWS as the agency managing the refuge. This will rise to 75% after two years and 90% after three years.

> **Potential Barriers that cannot be addressed by information**: None that can't be addressed by the information network.

Objective 3-2: One year after implementation of the first phase of development of the information network identified in this plan, 35% of residents of the Albuquerque Metropolitan area will be able to explain what the USFWS does and how it differs from other agencies. This will rise to 50% after two years and 65% after three years.

> **Potential Barriers that cannot be addressed by information**: None that can't be addressed by the information network.

Objective 3-3: One year after implementation of the first phase of development of the information network identified in this plan, 40% of residents of the Albuquerque Metropolitan area will be able to name at least 2 ways in which the USFWS has contributed to their quality of life. This will rise to 65% after two years and 75% after three years.

> **Potential Barriers that cannot be addressed by information**: None that can't be addressed by the information network.

Objective 3-4: One year after implementation of the first phase of development of the information network identified in this plan, 30% of residents of the Albuquerque Metropolitan area will be aware that the USFWS manages a *network* of refuges that are important to migratory birds, and aware of Bosque del Apache NWR and what it offers in terms of visitor experiences. This will rise to 50% after two years and 65% after three years.

> **Potential Barriers that cannot be addressed by information**: None that can't be addressed by the information network.

Objective 3-5: One year after implementation of the first phase of development of the information network identified in this plan, 5% of residents of the Albuquerque Metropolitan area who have visited the refuge will visit Bosque del Apache or another wildlife refuge. This will rise to 15% after two years and 25% after three years.

> **Potential Barriers that cannot be addressed by information**: Time and cost for travel will be significant barriers for many. Reducing those barriers by providing transportation could increase the percentage of residents who make the trip. The USFWS could also increase the % by conducting special events at Bosque del Apache NWR chosen and designed to appeal to the residents of the Albuquerque Metropolitan area.

Theme Hierarchy

Introduction

Interpretive themes (messages) and topics are not the same. A topic is a subject, such as "managing wildlife" A theme is a *statement* or *message* about the subject, such as "the key to managing wildlife is to manage their habitat." Themes are the core of the stories that are told in the interpretive opportunities; stories are selected in order to communicate themes. Consequently, themes are determined before selecting and developing the interpretive strategies.

The elements in a theme hierarchy include:

Themes (Messages)
These are the key ideas or concepts to be communicated.

> **Sub-themes**
> These are concepts that support a theme.

> > **Supporting Stories**
> > These are the stories that communicate a sub-theme or theme.

Themes are derived from goals and objectives by determining the concepts a visitor needs to understand in order for them to respond in a way that helps achieve the goals and objectives. Since people only remember 1-3 overarching concepts, it is important to avoid having a lot of themes.

Overview of Theme Hierarchy

Achieving the desired outcomes (actions by visitors) requires that people come away from their interpretive experiences valuing the resource, understanding the threats to the resource, motivated to take action, understanding what they can do to help conserve the resource, and feeling empowered that they can make a difference by taking individual action. To fully understand threats, actions that would cause a difference, and the work of the USFWS, people must understand the basic concept *'Wildlife depend on habitat for survival,'* and the corollary message, *'Managing wildlife is all about managing habitat.'* To be motivated to take action, they must feel empowered that they can make a difference, which means understanding the concept, '*Humans as a whole and as individuals can have positive and negative impacts on wildlife habitat.'*

The development of habitats on the refuge should provide a lot of opportunities to communicate the concept of wildlife depending on habitat. The damming of the Rio Grande, the clearing of the land for an agricultural field, saving the land from development, and the activities associated with restoring native habitat as a means of supporting native wildlife are all human activities that support the second point.

Those messages help the public understand what the USFWS does and why, but they don't encompass a fundamental point that is important to the goal of Urban Wildlife Refuges, which is that *Native Nature in urban areas is an important part of the quality of life of those who live there.* That is the point that will be most effective in motivating residents to landscape with native plants, help plant and tend Islands of

Habitat, and engage in other activities associated with bringing Native Nature into the urban setting in which they live. Those concepts, in some form, are included in the following theme hierarchy.

Themes, Sub-Themes and Examples of Supporting Stories

Theme 1: Native plants and wildlife are a valuable part of your quality of life, just as they have been for all the people that have lived in this area through time.

Comment: The first part of this theme is the key point that must be communicated in order to motivate people to take action to conserve, protect and restore Native Nature. Although conserving native plants and wildlife is the ultimate goal, it is important to begin by accepting the nature they already value, whether native or not, and working from that point.

Examples of Supporting Stories
The following are some, but not all of the stories that can be used to support this theme based on the tangible features currently on the refuge or that could be developed for the refuge, and on other features in the area. During the design process, some effort should be made to gather additional supporting stories that could be used in the Interpretive Network.

- Many pollinators that are crucial for sustaining many of the foods we enjoy, such as chili and nut crops, are endangered due to human activities.
- Research shows that the most effective reducers of stress are bird calls.
- Native Nature improves water and air quality (this is especially important to the surrounding communities that deal with poor air and water quality issues and have a life span around 10 years less than others who live in the Albuquerque area).
- Wetlands help mitigate floods and cleanse water.
- Native vegetation improves soil quality and stability, which helps mitigate erosion and dust/particulate matter (air quality).
- Native plants provide a diversity of food and medicine that have been used by people in this area for thousands of years.
- Native plants use less water, thereby reducing water bills when used for landscaping.
- Research shows health benefits from being in nature.

Theme 2: Wildlife, along with all other biological organisms, depend on the availability and health of their specific habitat to survive.

Comment: This is a key concept that underlies everything that the USFWS does, including the actions on the refuge and the selection of plants for Islands of Habitat and similar areas. The addition of *". . . all other biological organisms . . ."* provides the opportunity to at least hint at the concept that nature is a part of human habitat, and is therefore essential for survival of the human species. The story of the decline of pollinators helps tell that story. The addition of *". . . specific habitat . . ."* provides the opportunity to emphasize that some species are adapted to very specific habitats.

Sub-theme 2-1: Native wildlife depend on native plants as part of their habitat. (Plus the corollary theme: If you want to support native wildlife you need to plant native vegetation.)

Examples of Supporting Stories

The following are some, but not all of the stories that can support this theme based on the tangible features on the refuge or other features in the area.

- The relationship of Monarch butterflies to milkweed.
- Non-native species and their effects on native habitat and consequent effect on native wildlife.
- How different habitat types on the refuge attract different species.
- The increase in butterflies with the return of native vegetation.
- The increase in songbirds with the return of native vegetation.
- The increase in turtles with the return of wetlands.
- An increase in habitat diversity that leads to an increase in wildlife diversity.

Sub-theme 2-2: The habitat necessary to support migratory birds and wildlife extends the entire length of their migration routes.

Comment: Migratory waterfowl and other birds depend on a series of resting stops connecting their breeding grounds to their wintering grounds. Without them, they won't survive. That is why the USFWS protects key resting stops along the migratory pathway in addition to breeding and wintering grounds to ensure the survival of migratory birds. Ideally, the desire is for visitors to support the entire system of refuges, not just Valle do Oro NWR. Migratory birds and wildlife can be used to connect people to other refuges if people value a species that depends on other refuges.

Examples of Supporting Stories

The following are some, but not all of the stories that can support this theme based on the tangible features on the refuge or other features in the area.

- Monarch and swallowtail butterflies and other habitats they need over the course of a year along their migration route.
- Violet-green and tree swallows and other habitats they need over the course of a year along their migration route.
- Swainson's hawk and other habitats it needs over the course of a year along their migration route.
- Ducks (green wing teal, cinnamon teal, pintail, northern shoveler) and other habitats they need over the course of a year along their migration route.
- Warblers and other migratory songbirds and other habitats they need over the course of a year.
- The migration of white-faced ibis and the habitats they need along the way.

Theme 3: Water, because it is a critical component of habitats, has long determined patterns and quality of life in the Middle Rio Grande Valley.

Comment: Another way of saying this is, "Water is the lifeblood of the Middle Rio Grande Valley." Regardless of the form, this storyline holds true for humans as well as other biological organisms, ties the past to the present, and ties the present to the future of the area. It underlies the need for water conservation, and indirectly supports the restoration of the swales and wetlands due to their function in cleansing water.

Sub-Theme 3-1: Water in all its forms has and continues to dictate and control the type and extent of cultural activities in the Middle Rio Grande Valley.

Examples of Supporting Stories
The following are some, but not all of the stories that can support this theme based on the tangible features on the refuge or other features in the area.

- The acequias that brought water to grow crops, sustaining not only those who farmed the area, but also those who lived nearby.
- The Barr Interior Drain, a part of the water management system that takes water from the Albuquerque Riverside Drain to the Williams Lateral, helps keep the groundwater level low enough to avoid negative impacts on septic tanks and wells in the surrounding neighborhoods.
- The Albuquerque Riverside Drain and its positive impacts on the water management system for the area.
- The proposed AMAFCA stormwater management system, which reflects issues with stormwater runoff, and of the increase in stormwater runoff due to modifications of the landscape.
- The presence of the Camino Real de Tierra Adentro (and the fact that it moved periodically in response to the shifting course of the river). The waters of the Rio Grande and adjacent riparian wetlands and bosque provide for the needs of travelers – drinking water for humans and livestock, fish and game for food, wood for fires, and shelter from the sun.
- The presence of Albuquerque on the banks of the Rio Grande. For the same reasons as travelers, settlers followed the river and settled on its banks. The river and associated bosque and wetlands provided materials for building, weaving and weapons; provided food and drinking water; and provided firewood. The presence of a year-round supply of water was crucial for settlements because they could grow food and store it, allowing them to stay during cold winter months.
- The vestiges of farmland. Farming was possible in large part because of the availability of water from the Rio Grande.
- The presence of the bosque. The cottonwoods in the riparian area of the Rio Grande provided shade, building materials and firewood to early inhabitants of the area. It is now threatened by the damming of the river and its effect on cottonwood reproduction.
- The old oxbow, mute evidence to the changing river channel that helped create and maintain the bosque as an uneven-aged forest, and affected the location of trails, homes and other built-features.
- The location of pueblos near the river. This should also include Isleta pueblo's connection to the river and cultural ties to water ('Isleta' means island).

Sub-Theme 3-2: Wetlands are important to your quality of life.

Examples of Supporting Stories
The following are some, but not all of the stories that can support this theme based on the tangible features on the refuge or other features in the area.

- Wetlands do the work of many of the man-made structures on the river by soaking up flood waters, thus protecting people from flooding naturally.
- Wetlands filter and cleanse water, helping maintain water quality and consequently, fish and other aquatic life.
- Wetlands trap topsoil so it isn't lost through erosion, which also keeps it out of rivers and streams where it could destroy fish spawning habitat.
- Wetlands are a nursery for many species of birds and wildlife.
- Wetlands support many species of birds that people enjoy, such as songbirds.
- How the AMAFCA Swale works to clean water and the water testing stations entering and exiting Valle de Oro NWR.
- Wetlands filter out nitrates from water, which helps avoid blue baby syndrome.

Sub-theme 3-3: Water is a crucial factor in determining the plants and wildlife – resident and migratory – that can survive in the Middle Rio Grande Valley.

Examples of Supporting Stories
The following are some, but not all of the stories that can support this theme based on the tangible features on the refuge or other features in the area.

- The presence of the bosque, which was due to the presence of water and seasonal flooding of the Rio Grande.
- The return of plants and wildlife associated with the restoration of the wetland habitat.
- The positive impact of restoration of wetland habitat on endangered species that use the Rio Grande and the Bosque.
  Note: The restoration of the wetlands causing return of biological organisms that depend on this habitat type will also be very important for communicating the basic concept that biological organisms are adapted to living in specific habitats, which is why managing wildlife is all about managing habitat. Although most visitors are not going to have any difficulty understanding this concept, it is nonetheless important to communicate it because it underlies the importance of a system of refuges along the Rio Grande for migratory wildlife, and the need for migration corridors for terrestrial organisms.

Theme 4: Everything in an ecosystem is linked. Impact on any one component has a ripple effect that causes impact on habitats it supports and on other components of that ecosystem, including humans.

The connection between habitat and wildlife is a simple example supporting this concept, but it is important for people to understand that what happens elsewhere in an ecosystem, including what they do in their homes, has impact throughout the ecosystem, including parts they value. It also supports why restored uplands are important to the health of the wetlands and riparian areas.

Sub-theme 4-1: Native wildlife depend on native plants as part of their habitat. (This is also sub-theme 2-1.)

Examples of Supporting Stories
The following are some, but not all of the stories that can support this theme based on the tangible features on the refuge or other features in the area.
- The relationship of Monarch butterflies to milkweed.
- Non-native species and their effects on native habitat and consequent effect on native wildlife.
- How different habitat types on the refuge attract different species.
- The increase in butterflies with the return of native vegetation.
- The increase in songbirds with the return of native vegetation.
- The increase in turtles with the return of wetlands.

Sub-theme 4-2: All parts of an ecosystem, including the forces that shaped and continue to shape it, are necessary to keep the system healthy along with all the habitats it supports.

Comment: This is a concept that emphasizes the connections between different parts of an ecosystem, and reflects a strategy for motivating people to take care of all parts of an ecosystem. It is the approach used for discussing prey species and for discussing natural 'disasters,' such as flooding.

Examples of Supporting Stories
The following are some, but not all of the stories that can support this theme based on the tangible features on the refuge or other features in the area.
- Healthy uplands are critical to healthy wetlands.
- Deserts are not wastelands. They provide value in themselves and to the rest of the ecosystem. (This can be supported by noting plants and other resources valued by peoples who lived in this area, and by connections to the wetlands and river.)
- The impact of climate change on a single species, and the resulting impact on other species.
- The impact of climate change on habitats, such as the Chihuahuan desert moving north.
- The role of flooding on the bosque.
- The role of trees in arid and semi-arid ecosystems in providing and protecting other parts of native habitat.
- The role of predators in nutrient cycling and maintaining healthy populations of prey species.

Sub-theme 4-3: Humans can determine what organisms live and what die by impact on habitat. Those impacts ultimately affect humans since humans are a part of the ecosystem.

Comment: Another way of stating this is that people are a part of ecosystems, so everything they do has impact on other parts of the system. They can be a positive force or negative force – the choice is theirs. Ideally this will reach to the individual level, so people feel that they can make a difference by planting native plants in their yards, recycling, conserving water, and engaging in other actions associated with a sustainable lifestyle.

Examples of Supporting Stories
The following are some, but not all of the stories that can support this theme based on the tangible features on the refuge or other features in the area.

- The absence of many biological organisms on the refuge due to human impact on the habitat (turning it into an agricultural field). (This has to be used carefully, if at all, to avoid offending people in the community.)
- The return of species as habitat they depend on is restored.
- The impact of invasives introduced by humans.
- The need for habitat restoration in the bosque since seasonal flooding of the Rio Grande no longer occurs.
- The story of the Refuge's establishment and the critical role played by the community. This can be empowering in terms of the scale of what can be accomplished by working together. It can also illustrate how preservation of diminishing parcels of land for open green space, free from development, and for wildlife habitat is possible, and how it can be accomplished. The entire story speaks to stewardship, and to the development of Valle de Oro NWR as a model for collaboration in the establishment of other Urban Wildlife Refuges.
- Many pollinators that are crucial for sustaining many of the foods we enjoy are endangered due to human activities. Communicating this story effectively requires showing how pollinators affect foods we enjoy, and showing how human activities have both positively and negatively affected pollinators. This should be followed by a 'Call to Action' to let people know what they can do on an individual basis.
- The positive impacts of human actions on improving the water quality in the Rio Grande, and how that has benefited wildlife, including helping to preserve the endangered silvery minnow.

Sub-theme 4-4: Because individual actions add up incrementally to significant impacts, you can play an important role in maintaining natural resources.

Comment: This sub-theme is one key to motivating people to take individual action. People can get overwhelmed by the enormity of issues such as global climate change, so it is important for them to believe that simple acts, such as planting a native plant in their yard, or recycling, can help. The ideal supporting stories in this case are ones focusing on individual action rather than action by a large group of people, although the latter also help support the point.

Examples of Supporting Stories
The following are some, but not all of the stories that can support this theme based on the tangible features on the refuge or other features in the area.

- The story of the saving of the refuge from development with emphasis on the individual actions that people took and are taking. This could include the partners that helped make the refuge possible, but only if the focus doesn't stray too far from individual action.
- Pesticide use and its impact
- "Scoop the poop" to prevent e-coli from entering the river.

Theme 5: Valle de Oro NWR and the USFWS are assets to the community.

Comment: This is a key message in motivating residents to support the USFWS and its actions.

Note: This message will be communicated more effectively by visible actions rather than telling people how the refuge and the USFWS are assets. Consequently, the following are examples of supporting actions rather than stories. The actions will become stories told by residents to other residents.

Examples of Supporting Actions
The following are some, but not all of the actions that can support this theme:
- Providing employment opportunities for youth;
- Providing educational opportunities for youth (particularly ones that they don't get in schools and ones that could lead to employment);
- Partnering with the community to fight threats such as poor air and water quality through citizen science projects;
- Environmental Justice work by the USFWS;
- Recreational opportunities provided by the USFWS;
- Technical assistance provided by the USFWS;
- Support by the USFWS on projects within the community.

Enjoying a family outing at the refuge   **Image courtesy of USFWS**

Visitor Interpretive Experiences Plan

A Day in the Life of the Alvarez Family

While at a local park on a spring weekend, the Alvarez family encounter an interpretive presentation on 'Wonderful Wetlands' by an interpreter from Valle de Oro NWR. They hadn't known that a National Wildlife Refuge existed in the city. Taking a brochure, they discover that it has a lot of intriguing visitor opportunities, including programs, events, classes and recreational opportunities. They talk to the interpreter afterwards, and find out that a special program on butterfly gardens is scheduled for the next Saturday. The interpreter offers them free bus passes, but they decline since they have their own transportation. She also gives everyone in the family a coupon for a free water bottle with the name of the refuge printed on the side along with the USFWS logo and the blue goose logo.*

Upon returning home, they check out the website and find that the refuge has walking trails, a visitor center with exhibits and programs, a Discover Nature App for exploring the refuge, and a variety of other opportunities, so they decide to make a day of it when they go to attend the class. The next weekend they download the App, and the whole family – children, parents and grandparents – make the trip to the refuge by car. Although they all speak English, they appreciate that the directional signs along the route leading them into the refuge parking area are also in Spanish, especially the grandparents for whom Spanish is their first language.

They exit the car and take the walkway to the Visitor Center, stopping to check out the information kiosk along the way. They pick up a site map/brochure, but don't spend a lot of time looking at the information other than noting a list of upcoming events. Upon entering the Visitor Center, they immediately note the direction to the restrooms, a staffed information desk, the entry to an Exhibit Hall with a partial view of some intriguing exhibits, and a temporary sign indicating the location of the class on making a butterfly garden. Both grandparents are appreciative of the automatic door openers on the entryway and restroom doors.

Since they have a bit of time before the class, after using the restrooms they converge on the Self-Serve Orientation Area to gather additional information and plan the rest of their visit. Then it's on to the class, where the interpreter shows them how to plant and tend a butterfly garden while explaining how different butterflies use different plants, and how important it is to plant native vegetation that the butterflies use because they are pollinators, a very important (and at risk) type of organism in the ecosystem. In fact, they find out that many of the foods they enjoy depend on pollinators whose populations have plummeted in recent years. At the end of the class they are given packets of seeds and instructions on how to plant their own butterfly garden.

The next stop is the Exhibit Hall. The grandparents, as longtime residents, are particularly interested in the exhibit on the history of the site and the role of the Rio Grande in shaping the cultural activities because they remember the old dairy, and it reminds them of stories they heard as children. The children gravitate to the interactive exhibits in Life Zones of the Middle Rio Grande Valley, where they become enamored about the idea of becoming a 'Detective of the Landscape.' They pick up the Sense–ational Discovery Guide and talk their parents into borrowing an Explorer's Backpack from the front desk. They also turn in their coupons and get their free water bottles, which they fill up before heading outside.

At the far end of the patio they stop to look out over the refuge and read the low-angled interpretive panels. The panels include historical photos from when the site was a dairy (which are of great interest to the grandparents), and images showing how the site has changed and will continue to change through time as the refuge grows up, due in large part by volunteers from the surrounding community, including children.

By this time the grandparents are getting a bit tired, so they decide to rest in the shaded patio area and then take a closer look at the Demonstration Gardens while the children and parents explore the refuge using the Discover Nature App and the Sense-ational Discovery Guide. Their explorations take them to the trail to the Rio Grande, and to the Rio Grande overlook, where they listen for bird calls they heard in the Exhibit Hall, look for signs of wildlife shown in the Sense-ational Discovery Guide, and learn more about the Rio Grande on the App. They finally head back to meet up with their grandparents, who want to show them the different gardens they found in the Demonstration Garden area.

They return to the Visitor Center before they leave to use the restrooms, visit the Nature Store run by the Friends Group, and purchase the Guide to Natural Areas in the Albuquerque area. The grandparents purchase seeds and instructions on planting a pollinator garden because they want to do their part in making sure they continue to have the foods they like to eat. The family also picks up information on an upcoming class on planting a pollinator garden, and provide an email address so they can get information on classes and events. The grandparents are intrigued by the idea of becoming involved on a regular basis so they pick up information about the Friends Group

They get in their vehicle and exit the refuge. Signage guides them back to the major highway. Later that week they get an email thanking them for coming and letting them know of upcoming events and classes, including an event at a partner site on plants that attract songbirds that sounds intriguing.

* The coupon for the water bottle, sponsored by the Friends Group, provides a way of determining how effective the off-site presentations are at attracting visitors. It also provides an opportunity to talk about the importance of water for all living organisms.

Visitor Interpretive Experiences

Stages of Visitor Interpretive Experiences

The hypothetical experience of the Alvarez family is one of a myriad of interpretive experiences that visitors can have at Valle de Oro NWR after the plan is implemented. Regardless of the exact experiences, all have the same basic stages with the same basic information needs.

Awareness

Whether visiting the refuge or an off-site feature such as an Island of Habitat, potential visitors must make the decision to visit, which requires them to be aware of such opportunities. One role of the off-site information network is to market experiences at the refuge and elsewhere so potential visitors know that Albuquerque has a National Wildlife Refuge, that the refuge welcomes visitors, and that it offers attractive opportunities for visitors. The network must have a variety of off-site strategies, such as impromptu interpretive programs at parks, a write-up of the refuge in a summer activity guide and radio spots, because members of the target audiences differ on how they gather information. For some, awareness of the refuge and the fact that it has intriguing visitor opportunities will not be enough – barriers must also be addressed.

Some may have a fear of Native Nature, with little experience outside of nature found in a built environment. Although marketing information can probably make some progress in that regard, it will be important to market the experiences as 'safe.' Some members of the target audience may fear the uniform – mistaking it for Border Patrol. Overcoming that barrier is likely to take some time and repeated exposure outside the refuge to the uniform and logo coupled with a deliberate attempt to draw the distinction between the logo of the USFWS logo and other logos, particularly law enforcement.

Pre-Visit Experience

Whether they follow up on the Internet, call the refuge, or pick up a brochure at an off-site location, people interested in visiting the refuge need information to plan their trip (Trip Planning Information).

Travel Experience

For those traveling on their own, wayfinding information is needed, again offered in a variety of strategies that stand alone, but also serve to reinforce each other. For example, visitors can obtain a map from a distribution point or by printing it off, and use it alone to find the refuge. However, directional signage at key intersections can reassure them that they are going in the right direction. Those traveling by means of bus or other public transit will simply need to know where to get off. Ideally, a specific bus stop for the refuge will be added. However, attention must be paid to members of the target audience who cannot afford public transportation. That barrier can be addressed by reduced or no cost for bus passes (perhaps on specific days and/or times), or by the refuge providing transportation in the form of a van or mini-bus, although that might incur liability issues that are too difficult for the USFWS to overcome.

Arrival Experience

Upon arrival, visitors must have immediate access to restrooms and orientation, wayfinding and site-specific trip planning information because these are needs. Interpretation is an option. When they finish with this stage of their experience, they must be aware of the location of the restrooms (even if they don't use them on arrival), aware of sources of information regarding upcoming programs and events, aware that a person is available to answer questions, aware that the visitor center has a Nature Store, have a plan for their visit, and know how to begin the experience that attracted them to the refuge.

Primary Experience

Visitors then engage in the experience that attracted them to the refuge. Regardless of the experience / opportunity that attracted visitors, all experiences should have an interpretive component that motivates visitors to want to engage more fully in the interpretive opportunities. The interpretive network guides them intellectually and physically through the refuge as it is and as it could be, all the while establishing emotional and intellectual connections critical to motivating the visitors to take action, not only to help the refuge, but to protect their natural heritage.

Departure Experience

After engaging in the primary experience, visitors must prepare to leave, which typically involves another trip to the restrooms and often a visit to the Nature Store. To facilitate this part of the experience, visitors must be able to get back to the Visitor Center easily from wherever they are on the refuge. This is the part of the visitor experience when they are most receptive to information on upcoming programs, events and other reasons for a repeat visit. The motivation to come again can be increased by adding incentives for repeat visitors. This is also a good time to offer information about the Friends Group and what it does to help the USFW at Valle de Oro.

Return Travel Experience

The last part of the experience associated with visiting the refuge is the return home. To do so, visitors need orientation and wayfinding to guide them back to a major highway, the bus stop, the train stop or wherever they are headed.

Post Trip Experience

Unless visitors have requested information from the refuge, such as notices of upcoming programs and events sent via email, they don't have a need for continued contact. However, it is in the best interests of the USFWS to have a communication channel so they can continue to market experiences and opportunities. This can be email and/or social media.

Strategies by Stage of Visitor Experience

Awareness: Introduction

Most visitor experiences with the refuge are likely to begin off-site, typically within the context of a potential visitor's existing lifestyle, and not usually with a visit to the refuge's website. Potential visitors must first become aware of the refuge and that it has opportunities in which they might be interested in order to motivate them to visit the website. That necessitates extending the information / interpretive network into the urban areas and inserting elements of the network into places already frequented by the target audiences, whether physically or digitally. That includes coffee shops, nurseries, social media, websites, newspapers, events, etc. Potential strategies include the following:

- Traditional marketing strategies that use information delivery channels already being used by the target markets, such as radio and television spots and information in the newspaper;
- Information in places the target markets gather information on what to do with their leisure time for their family or their children, such as Alibi, NM Kids, and the Summer Activities Guide;
- Information specifically about the refuge in a bilingual format, such as a rack card or flyer, that can be distributed at partner sites and other locations;
- Off-site interpretive opportunities such as a traveling exhibit, impromptu interpretive presentations at events or in parks, scheduled presentations, and Table Teasers;
- Islands of Habitat and Specialty Gardens that use native plants, such as Pollinator Gardens, Butterfly Gardens, Native Food Gardens, etc. These can be thought of as exhibits, with associated interpretive information designed to use the habitat or garden to tell a story while also making visitors aware of the refuge.

Regardless of the strategy, all should be trying to make people aware that Albuquerque has a National Wildlife Refuge that offers visitor opportunities, invite them to visit, and make them aware of where additional information can be obtained. Marketing strategies should also reassure potential visitors regarding the safety of a visit. For some, that may be simply seeing images of the refuge that communicate that it is a small site completely within a built environment so they don't have to worry about getting 'lost' in an unfamiliar natural setting. For others, communicating the concept of 'safe' requires an understanding that the USFWS is not the Border Patrol. That concept may be more difficult to communicate on publications, and may simply require a longer process involving the USFWS maintaining a high degree of visibility while engaging in projects the community deems valuable, which are not typical activities for Border Patrol or other law enforcement agencies. Eventually, the USFWS will become part of the fabric of life in the community and word of mouth and/or repeated exposure will help make members of the community comfortable visiting the refuge.

Note: *Visibility of the USFWS can be achieved by non-interpretive activities in the community with the goals of creating visibility, building trust, and increasing perception as an asset by residents. That doesn't necessarily translate into awareness of the refuge. However, it does create opportunities for conversation so residents can learn about the refuge and what it has to offer first hand from people associated with the refuge, whether staff, members of the Friends Group or members of the youth corps.*

Awareness: Strategies to Catch Attention

Table Teasers

Objectives
After interacting with and of these opportunities, visitors will:
- Know that Albuquerque has a National Wildlife Refuge;
- Know that the refuge is not only open to the public, but offers visitor opportunities;
- Be motivated to visit the refuge to take part in visitor opportunities;
- Feel comfortable visiting the refuge;
- Have or know where to obtain trip planning information (directions, hours open to public, schedule of activities, etc.).

Description and Concept
Table Teasers, in Spanish and English, are intended to grab a visitor's attention and interest so he or she is more likely to seek out more information about the refuge. Table Teasers can take the form of place mats, laminated cards, or booklets to name a few possibilities, and are typically found in restaurants where people browse them while waiting for food. Table Teasers focus on presenting interesting tidbits of information ('didjaknows') associated with the stories covered by the interpretive network. They should contain directions to the site, the website address and contact information, such as phone numbers, so visitors can obtain more orientation and/or interpretive information. All restaurants and coffee shops in the area should have Table Teasers.

Comment
It is important that all entities developing Table Teasers use the same design guidelines (branding) to ensure a unified look and visual recognition that the Table Teasers are associated with the refuge.

Traditional Mass Media Strategies – Radio, Television, Newspapers, etc.

Objectives
The specific objectives will vary depending on the information included, but all should be designed with the same objectives in mind as those used for the Table Teasers.

Description and Concept
No specific design concepts are included because the context for which the information must be designed is often already determined (radio spots, television spots, newspaper articles). However, all of these strategies must focus on opportunities that would be of interest to urban residents rather than traditional users, and all must provide information on where a visitor can get additional information, such as the website, by telephone, etc. In addition, information should be presented in Spanish and English.

Rack Cards and Flyers

Objectives
The specific objectives will vary depending on the information included, but all should be designed with the same objectives in mind as those used for the Table Teasers.

Description and Concept
These need to be colorful to catch a person's attention, and ideally should show visitors enjoying an experience on the refuge to clearly communicate that visitors are welcome at the refuge, and that the site does have visitor opportunities. Ideally, the focus would be on opportunities that would be of interest to urban residents rather than traditional users. Given the limited opportunities at present, an event on the refuge might be the most effective. As with other strategies trying to market visitor experiences at the refuge, rack cards and flyers must provide information on where a visitor can get additional information, such as the website, by telephone, etc. In addition, information should be presented in Spanish and English.

Islands of Habitat with Interpretation

This term 'Islands of Habitat' has been coined for pockets of native flora designed to reflect typical native plant communities that are planted outside the refuge, such as in school yards, parks, community centers, and backyards. These Islands of Habitat support native fauna, pollinators, and other native biota. They can be effective Stepping Stones of Engagement for urban audiences because they tend to be highly visible, easily accessible, and are likely to be considered 'safe.' A key to being effective as a stepping stone is the associated interpretation and/or environmental education opportunities.

Development should be with a partner and the planning should be participatory, particularly in schools where the USFWS could help by supplying plants, overseeing planting, supplying information on why certain plants are associated and what wildlife they can expect, working with the teachers to develop curriculum materials, and also developing a discovery guide that youth can use with their parents to 'discover' nature in the islands.

Although New Mexicans may care about the environment, for many of them, jobs and their youth's education are much higher priorities. Consequently, features that can be planned / designed / constructed by youth where they gain job skills, and perhaps income, should be a high priority, as should opportunities that provide educational opportunities. Both would help earn the trust of the community and increase the perception of the USFWS as an asset.

Locations
Islands of Habitat could be located in a variety of settings, including schools, parks and other public places. The best locations are places that they are likely to be used by more than one group of people. For example, in schoolyards they could be used by teachers for courses relating to natural history and could also be used by community members during hours the school is not in session.

Objectives for interpretive strategies

After encountering the interpretive information associated with Islands of Habitat, visitors will:

- Be aware of and motivated to visit other Islands of Habitat that have different vegetation;
- Be aware of and motivated to visit the refuge;
- Understand the concept – at some level – that wildlife depends on specific habitat for survival, therefore, managing wildlife is all about managing habitat;
- Be interested in planting native vegetation in their own yard (if they have one).

Themes

Almost any theme could be used to help develop the storylines for Islands of Habitat, but the key ones include:

Theme 2: Wildlife, along with all other biological organisms, depend on their specific habitat to survive.

Sub-theme 2-1: Native wildlife depend on native plants as part of their habitat. (Plus the corollary theme: If you want to support native wildlife you need to plant native vegetation.)

Theme 4: Everything in an ecosystem is linked. Impact on any one component has a ripple effect that causes impact on the habitats it supports and on other components of that ecosystem, including humans.

Sub-theme 4-3: Humans can determine what organisms live and what die by impact on habitat. Those impacts ultimately affect humans since humans are a part of the ecosystem.

Sub-theme 4-4: Because individual actions add up incrementally to significant impacts, you can play an important role in maintaining natural resources.

When possible, the following theme should always be communicated:

Theme 1: Native plants and wildlife are a valuable part of your quality of life, just as they have been for all the people that have lived in this area through time.

Description and Concept

Strategies for communicating associated information should include at least one that can be accessed by smart phones, a publication of some sort, and a fixed sign. The latter should be used to acknowledge the people who helped plant the Island of Habitat and provide information on accessing the interpretive information using a smart phone. It could also contain a 'didjaknow' that focuses on a value of native plants from the perspective of the community.

The actual strategy for the cell phone should be selected when it is time for implementation because additional tools will be available by that time, but one possibility is a mobile website that can hold information on all Islands of Habitat in the city along with any other off-site exhibits such as Specialty Gardens. Information could be offered in audio and visual formats.

The publication would be brief, and would include an identification key for not only the plants but the wildlife that might be seen using the habitat. Again, all information should be offered in at least Spanish and English.

Specialty Gardens with Interpretation

In a sense, these are simply Islands of Habitat focusing on very specific species rather than representing typical plant communities that form habitats in the area. A wide variety of Specialty Gardens could be planted, such as ones made up of native plants traditionally used as medicines, and native plants traditionally used for food or in food preparation.

Locations

Specialty Gardens would be good in a wide variety of locations, for example in schoolyards because they present teachers with teaching opportunities and can be used during non-school hours by others. They could also be located at Community Centers, places of worship, day care facilities, and other places frequented by the target audiences. Parks might be good locations as long as they could be maintained by city maintenance workers or volunteers and are not likely to get vandalized. The choice for a garden in a particular location might depend on what else is in the area. For example, Pollinator Gardens might be a good choice for places close to businesses associated with food, and gardens with native plants traditionally used for medicinal and/or health reasons might be appropriate for hospitals or senior living centers. The visitor center could have more in-depth interpretive opportunities that are an extension of the information presented at these gardens in order to motivate visitors to these off-site opportunities to visit the site for more in-depth information.

Objectives for interpretive strategies

After encountering the interpretive information associated with Specialty Gardens, visitors will:
- Be aware of and motivated to visit other Specialty Gardens;
- Be aware of and motivated to visit the refuge;
- Understand the concept – at some level – that wildlife depends on specific habitat for survival, therefore, managing wildlife is all about managing habitat;
- Feel empowered to make a difference by planting native plants;
- Be interested in planting their own Specialty Garden at home.

Themes

Different themes are likely to be more appropriate for different types of gardens. For example, themes about the relationship of wildlife to habitat would be appropriate for Butterfly Gardens and Pollinator Gardens, but not for some of the gardens where the focus is on the plants rather than what the plants attract. As another example, the concept that Native Nature contributes to our quality of life would be highly appropriate for Pollinator Gardens and ones that focus on plants related to health. As with Islands of Habitat, almost any of the themes could be used to drive the development of the associated interpretive opportunities, but the following are key ones:

Theme 1: Native plants and wildlife are a valuable part of your quality of life, just as they have been for all the people that have lived in this area through time.

Theme 2: Wildlife, along with all other biological organisms, depend on their specific habitat to survive.
> **Sub-theme 2-1:** Native wildlife depend on native plants as part of their habitat. (Plus the corollary theme: If you want to support native wildlife you need to plant native vegetation.)

Theme 4: Everything in an ecosystem is linked. Impact on any one component has a ripple effect that causes impact on the habitats it supports and on other components of that ecosystem, including humans.

> **Sub-theme 4-3:** Humans can determine what organisms live and what die by impact on habitat. Those impacts ultimately affect humans since humans are a part of the ecosystem.
>
> **Sub-theme 4-4:** Because individual actions add up incrementally to significant impacts, you can play an important role in maintaining natural resources.

Description and Concept

The same strategies and design concepts noted for Islands of Habitat are appropriate for Specialty Gardens. In addition, if the Garden is associated with a business such as a restaurant, supplemental information could be developed that ties to the Garden. For example, Table Teasers in a restaurant with a Pollinator Garden could use information associated specifically with pollinators.

Note: Backyard habitats were identified as one of the features that the USFWS could help develop. They should be considered both as one of the desired outcomes of a visitor's interpretive experience, and as something that the USFWS could help plant. However, although the planting could involve education regarding the value of native plants in landscaping, backyard habitats don't have an interpretive component because they are on private property. In contrast, Islands of Habitat, Pollinator Gardens, Pocket Parks, Butterfly Gardens and similar plantings in public areas can have an interpretive component, so they are included in the VIEP.

Impromptu Interpretive Presentations

Location

Anywhere that people from target audiences gather, such as at parks, events, etc.

Objectives

Specific objectives will depend on the presentation, but regardless, all visitors after attending a presentation will:

- Be aware of Valle de Oro NWR;
- Be motivated to visit the refuge;
- Have information to help facilitate that visit (flyer, brochure, etc.);
- If appropriate, be more able to visit the refuge due to a decrease or elimination of barriers, such as having bus passes, which could be used to assess effectiveness of off-site strategies. Bus passes could also be designed to reflect where the bus pass was distributed, thus determining effectiveness for programs in specific parts of the Albuquerque metropolitan area.

Key Themes and sub-themes

These will vary based on the presentation.

Description and Concept

There is no specific concept that provides a blueprint for presentations because the context will always be different. The key is to provide the interpreter with flexibility in choosing and delivering a program on the spot that caters to a specific crowd and setting. The more props and basic strategies available to the interpreter, the higher the probability of having something that fits the situation and audience. One

possible tool is a vehicle outfitted with props and interpretive opportunities, such as the USFWS trailer currently owned by the refuge. An interpreter drives the vehicle to places where members of the target audience gather, such as events, parks, and Farmer's Markets, and presents programs. The vehicle could be painted to attract attention and help create visibility for the USFWS and the refuge.

Note: Impromptu presentations are a good tool for creating opportunities to get into conversations with residents to find out what they would like to have help with from the USFWS.

Traveling Exhibits (with accompanying literature)

Traveling Exhibits would require an initial investment of time and resources, but could then be used with minimal demands on staff time. If the Friends group managed the schedule and shipping of the exhibit, the demands on USFWS time would be even less.

Locations
They could be used at partner sites and anywhere a representative of the refuge was giving a presentation or staffing a booth.

Objectives
The specific objectives will depend on the content of the exhibit, which should be adjusted for the target audience. However, at a minimum, people interacting with this exhibit will:
- Know that Albuquerque has a National Wildlife Refuge;
- Know that the refuge is not only open to the public, but offers visitor opportunities;
- Be motivated to visit the refuge to take part in visitor opportunities;
- Feel comfortable visiting the refuge;
- Have or know where to obtain trip planning information (directions, hours open to public, schedule of activities, etc.).

Themes
The themes driving the content will depend on the topic, but exhibits should be developed that communicate all the themes and subthemes.

Description and Concept
Traveling exhibits come in many forms, but the one recommended for this network is one that can be set up easily and the components changed out quickly. One of the more common traveling exhibits is a set of surfaces covered with cloth to which a person can attach images, text, and even brochure holders using Velcro. They are commonly seen at conferences and trade shows. Specific exhibit layouts could be designed and all the necessary information packaged together with instructions for assembly so the exhibit could be used in a variety of settings and easily set up by anyone.

Pre-Visit Experience: Strategies to Help People Plan a Visit

After learning that the refuge exists and has opportunities in which residents might be interested, the next need is for trip planning information. Even if a visitor has the site brochure, he or she may want additional information. Many people will look for more information on the Internet. For those without access, the telephone is usually an option. Regardless of the information source, potential visitors should be able to easily find out all they need to know to plan a trip, such as hours of operation, what to bring, how to get to the refuge, how long a visit might take, etc. A website can also have additional information that markets experiences at the refuge while also communicating key messages through other opportunities such as the Introductory Video (see description under Primary Experience), and the In-Depth Video Tour of the site. Note that the In-Depth Video Tour may be the primary experience for visitors who are unable to access the actual refuge due to physical infirmity or other issues. For those who don't have access to the Internet, it will be important that they have access to the same information on the telephone, which requires training people who answer the telephone.

Valle de Oro NWR Website

Note: This site already exists. It is included simply because it is part of the Information Network necessary to support visitor interpretive experiences.

Objectives
Ideally, when people finish interacting with the information on this website, they will:
- Be motivated to visit the refuge;
- Have the information necessary to plan a visit to the refuge;
- Be aware of upcoming projects in which they could be involved;
- Be aware of upcoming events;
- Be aware of USFWS projects in the community.

Description and Concept
As noted, this site already exists and currently has information on visiting and events. It does not currently have information on potential projects for volunteers or information on USFWS activities in the community.

Note: The template for the website is relatively rigid, so suggestions simply pertain to adding elements as they are developed, such as the Introductory Video, In-depth Video Tour and any Applications or information designed for use on cell phones or IPads.

Friends of Valle de Oro NWR Website

Note: This site already exists. It is included simply because it is part of the Information Network necessary to support visitor interpretive experiences.

Objectives
Ideally, when people finish interacting with the information on this website, they will:
- Be motivated to join the Friends group and/or provide support in other ways;

- Have the information necessary to join the Friends group or provide support in some other way;
- Be aware of upcoming projects in which they could be involved;
- Be aware of upcoming events.

Description and Concept

As noted, this site already exists and currently has information on joining the Friends and on upcoming events. When the Introductory Video and the In-depth Video Tour are developed, they should be available on this site as well as on the USFWS website. As Applications (Apps) are developed and other information that can be downloaded onto smart phones are developed, they should also be available on this site.

In-depth Video Tour

Objectives

In addition to basic awareness of the refuge and what it offers in terms of visitor opportunities, after interacting with this opportunity, visitors will:

- Be motivated to visit;
- Be motivated to contribute in some way to the refuge and/or conservation of natural resources;
- Feel empowered that he/she can make a positive contribution.

Key Messages

All the key messages should be woven into the video.

Description and Concept

This tour is more extensive than the Introductory Video (see Primary Experience for description of the Introductory Video). It offers a series of short programs focused on different areas/features of the refuge to communicate the key stories and messages. The short segments avoid requiring the visitor to commit a long chunk of time to watching the entire video in one sitting. Although anyone can use the In-Depth Video Tour, it is especially useful for people who cannot come to the refuge and for 'armchair travelers.' The intent of the video is not to tour the refuge, but rather to use such a tour to communicate the key messages. It can and should have historical information intertwined, but with the intent of answering likely visitor questions in such a way as to inspire viewers to visit.

Travel Experience: Strategies to Help Visitors Find the Refuge

This is simply the part of the experience between when the visitor leaves home and when he or she arrives in the parking area. The key information needed during this part of the experience is wayfinding information. Although many visitors will likely use GPS, many will still rely on directional signage.

Directional Signage

Locations

At key decision points (intersections) potentially encountered by visitors trying to reach the refuge, whether by vehicle, bicycle or on foot (especially from bus stops and the closest Railrunner station).

Objectives

After encountering a directional signage visitors will
- Be able to quickly make a choice as to direction to go with confidence.

Description and Concept

The design is dictated by existing standards. The information should be limited to direction, and possibly distance if needed.

Note: *The directional sign encountered heading west on Desert Road from Highway 47 is not in the correct location as it can cause people to turn onto Bates Road.*

Arrival Experience: Exterior

The purposes of the information network supporting the Arrival Experience are primarily to make visitors feel welcome and move them quickly and with little mental effort on their part from where they parked, or where they have entered the refuge (if from a trailhead), to their desired destination (amphitheater, bosque, picnic area, Visitor Center), make them feel comfortable in their ability to find their way around, and guide them to facilities to meet their needs (restrooms, drinking water). When the Visitor Center is built, it will be the likely destination for most first-time visitors, and all necessary information and services should be available inside. Regardless, basic orientation and wayfinding should be available before visitors reach the Visitor Center so the site can function before the building is constructed, can function when the building is closed, and can help move people quickly to other destinations on the refuge without requiring them to go through the building, thus reducing potential congestion.

Note: Although arriving visitors can use interpretive opportunities at this point in their experience, they do not usually do so. Typically they are on their way to the restrooms, have not really "arrived" yet, and do not have the information necessary to orient themselves and plan their visit.

Note: a friendly and welcoming entranceway that is designed similarly to other Albuquerque features (such as by using mosaics similar to the convention center and other buildings on 2ⁿᵈ street) so it feels like it is part of the urban environment will help smooth the transition from the urban environment residents are comfortable with to a more natural environment.

Arriving by private vehicle

Aside from making visitors feel welcome through clear welcome signage (at least in Spanish and English), the initial goal regarding visitors who arrive by vehicle is to facilitate the transition from vehicular travelers to pedestrians, which requires travelers knowing where they are going when they exit their vehicles. Prior to the Visitor Center being built, a covered Arrival Station should be built between the parking area and the refuge, adjacent to the parking area and at the entry to the trail system. Restrooms should be located adjacent to the structure. With clear visual access to this structure as visitors drive in, they will know where to go after exiting their vehicle. If designed with the location and design of the Visitor Center in mind, the structure can be retained and used to serve as a staging area for site tours and possibly for school field trips, although it is better to separate school youth and other visitors to the extent possible.

Note: The Arrival Station can also be used to support the Departure Experience by providing an Area Orientation Panel with associated brochures/flyers to market experiences at partner sites

Since clear visual access to the Arrival Station (and to the Visitor Center when it is built) will be available from the parking lot, additional fixed wayfinding information should focus on other potential visitor destinations on the refuge that are not visually accessible, such as the pavilion, viewpoints, and perhaps specific trails, especially trails accessing the bosque since the river seems to be a popular destination.

Information delivery will be by a Site Orientation Panel with a 'you are here,' and by a site map/brochure, available from a brochure dispenser adjacent to the panel. In addition to the Site Orientation Panel and brochure dispenser, a covered bulletin board should be available for posting time-

sensitive information, such as hours of operation (which may change by season), schedule of special events and flyers advertising those special events.

Note: It will be important throughout the design of the site, the building, and the information strategies to be consistent with the message that 'Conservation is important!' Examples of details include the use of low flow fixtures, visible bike racks and other indicators of support for alternative means of transportation, clearly recognizable recycling receptacles at multiple easily-accessible locations throughout the site, and a system for recycling site map/brochures so they can be used multiple times.

Arrival by other means

Bicyclists arriving at the bike racks in the front of the Visitor Center will have essentially the same experience as those who arrive by car. Bicyclists and pedestrians accessing the refuge from other trailheads (such as the paseo del bosque trail) will need a welcome experience to let them know they are entering the refuge and to supply basic orientation information so they can begin their experience from that point without having to access the Visitor Center. This can be supplied using the same strategies as noted for the orientation information at the Arrival Station. A similar structure could be built at access trailheads, with orientation and wayfinding and Thematic Overview panels located in the sheltered area.

If a Rail Runner stop or bus stop were established, wayfinding and orientation from the location of the stops will be needed.

Directional Signage to Key Destinations

Locations

At key decision points (intersections) of trails.

Objectives

After encountering a directional signage visitors will

- Be able to quickly make a choice as to direction to go with confidence.

Description and Concept

The design is dictated by existing standards. The information should be limited to direction, and possibly distance if needed.

Site Orientation Panel

Locations
As needed, but at least at the major entryways.

Objectives
After viewing the panel visitors will:
- Be inspired, informed, and eager to explore the refuge;
- Know where they are in relation to other locations at the site;
- Know where to go next to continue their experience;
- Be aware of key interpretive/recreational opportunities on-site;
- Feel comfortable in their ability to navigate the site;
- Be aware of the opportunities that are fully accessible.

Description and Concept
The following are key aspects of the design and placement of the Site Orientation Panels that will increase their effectiveness:

1. Limit information to that which helps with its function, and avoid putting symbols and information that does not help, especially on the map. Focus on the information a visitor desires at this point, which usually focuses on answering the questions, "Where am I?" "What is there to do here?" and, "How do I get where I want to go?" At a minimum the Site Orientation Panel should contain the following:
   - Simple map of the site including roads, parking areas, trails, structures and key features
   - Mileages and times for walking the trails
   - A "You Are Here"
   - Visuals of key interpretive and recreational opportunities tied to location with information on which are fully accessible
   - North arrow
   - Legend scale i.e., 1 inch = 100yds

2. Orient the panel in the direction that the visitor is facing when looking at the sign instead of north. People expect information at the top of a map to be in front of them. This requires determining location and orientation for panels prior to design and fabrication.

3. Viewing the same map on a panel as is used in an associated brochure helps visitors move back and forth between the two, so consider using the same map for both.

4. Use a 3-dimensional look to the map to help visitors recognize features. This is not always possible, but studies show it is significantly easier for many people to use a map with 3-dimensional orientation rather than a flat map.

One possible concept is to use a stylized illustration of the site from an oblique aerial perspective as the major orientation element and as a backdrop for all the basic orientation information. Arrange images of recreational opportunities, such as walking a trail, viewing exhibits, viewing the river, experiencing the Refuge Viewpoint, and reading outdoor interpretive panels, around the perimeter of the map, with a graphic element (line) connecting the image to the appropriate location on the map.

Recreating Safely Panel

Location
In all Arrival Stations.

Objectives
After interacting with this opportunity, visitors will:
- Be aware of the hazards related to plants and wildlife associated with recreating on the refuge, and also the low probability of encountering a problem, especially when practicing appropriate behaviors;
- Be aware that thousands of people engage in recreational activities in this type of environment without experiencing any problems with native vegetation or wildlife;
- Be aware of the need for drinking water to avoid heat-related issues;
- Be more comfortable engaging in recreational opportunities on the refuge and therefore more likely to engage in outdoor recreational activities.

Description and Concept
The key to a panel accomplishing the goals of encouraging visitors to engage in outdoor recreational activities while at the same time educating them about how to do so safely is a challenge. The site will have potential hazards, and they should not be minimized, but visitors should also not be frightened away from recreational opportunities.

The information can be presented in a variety of ways, but it is important to use visuals to depict key pieces of information, including depicting people behaving correctly, wearing appropriate clothing, and taking water and other essential supplies. The key hazards to focus on include those related to heat and dehydration and any biological hazards, such as rattlesnakes, and how to avoid negative encounters.

Arrival Experience: Interior

Note: This section and the next one (Primary Experience Interior) take place in the Visitor Center when it is built.

This is a continuation of the Arrival Experience that visitors will have available to them after the Visitor Center is built. People will enter the facility into the building lobby. The purpose of the lobby in a Visitor Center of this type is to meet people's basic needs (restrooms, drinking water and orientation information), direct visitors to different locations in the Visitor Center and facilitate all visitor experiences on the refuge.

Traffic flow in the entry area works most effectively when visitors entering the building can immediately identify the location of the restrooms, a source of site-specific orientation information (ideally both self-serve for those who prefer not to interact with anyone associated with the refuge yet and a staffed information counter for those who would prefer to talk to someone), and a sense of what else the building contains, such as an Exhibit Hall and Multi-Purpose Room, and in what direction those spaces are located. This will be especially important if the facility has a space where community meetings can be held, a learning center, and other spaces not typically associated with a Visitor Center. If the facility

has a Nature Store it should be visible as people enter so visitors know it exists, although most will not stop until the Departure Experience.

The facility also contains Departure Experience strategies, the descriptions of which can be found in the section on Departure Experience.

Information Desk

Location
In lobby of Visitor Center.

Objectives
After interacting with the opportunities in this area visitors will:

- Have had most if not all of their orientation and wayfinding questions answered, especially, "What is there to do here?" and "Where can I see wildlife?"
- Be excited about exploring the refuge;
- Have all the information they need for their desired experience (including a map);
- Know how to download and use the phone Applications;
- Feel comfortable talking to USFWS personnel;
- Are aware that the refuge offers programs and stages events (and have a copy of the event and program schedule), and that they can receive information on upcoming events and programs via email if they supply their email address.

Description and Concept
The Information Desk provides the opportunity to gather information from and ask questions of the staff. It is a critical part of the experience in part because some people prefer to get information personally, and in part because it sends the message that the USFWS thinks that serving the public is important enough to dedicate staff to that function. Information available at the Information Desk includes:

- Site Map/Brochure;
- Area map highlighting sites in the surrounding area with opportunities to explore nature;
- Information on upcoming and regular events and programs;
- All publications associated with the refuge and partner sites;
- An optional sign-in book that can be used to market events and programs (if people leave their email addresses), and used in any type of 'achievement' opportunity that involves getting credit for visiting the refuge more than once.

Self-Serve Orientation Area

The Self-Serve Orientation Area allows visitors to get all the orientation and wayfinding information they need without having to go to the Information Desk. Availability of the information eases pressure on the Information Desk when the facility is crowded and serves visitors who prefer to gather information this way rather than engage in personal contact. Key information needs include answers to basic questions (Where can I see wildlife? What is there to do here?), and orientation and wayfinding information facilitating a visit to other parts of the refuge.

Location
In lobby of Visitor Center, ideally visible from the entryway.

Objectives
After interacting with the opportunities in this area visitors will:
- Have had most if not all of their orientation and wayfinding questions answered, especially, "What is there to do here?" and "Where can I see wildlife?"
- Be excited about exploring the refuge;
- Feel comfortable in their ability to find their way around the site;
- Have all the information they need for their desired experience;
- Are aware that the refuge offers programs and stages events (and have a copy of the event and program schedule).

Description and Concept
To function effectively, visitors entering the facility must be able to quickly identify the type of information offered at this station. One possibility is to use a large title and visual element, such as "What is there to do here?" and/or "Where can I see wildlife?" accompanied by a collage of people engaging in a variety of activities at the refuge. All the same information as is available at the Information Desk would be available at this station.

Recreating Safely Exhibit

Although a panel with similar information will be located in the Arrival Stations, most people coming from the parking area will bypass that information after the Visitor Center is built and come into the building instead.

Location
Next to the Self-Serve Orientation Area.

Objectives
After interacting with this opportunity, visitors will:
- Be aware of the hazards related to plants and wildlife associated with recreating in this area, and also the low probability of encountering a problem, especially when practicing appropriate behaviors;
- Be aware that thousands of people engage in recreational activities in this type of environment without experiencing any problems with native vegetation or wildlife;

- Be aware of the need for drinking water to avoid heat-related issues;
- Be more comfortable engaging in recreational opportunities on the refuge and therefore more likely to engage in outdoor recreational activities.

Description and Concept

Although this could be just a duplicate panel to the one outside, it would probably be more effective to present information in a video format to catch people's attention. A prominent display in the lobby will reach more people, including those who are not specifically seeking out this information because they are not aware of the need to be informed on the subject. One possibility is to use an LCD screen to play a looped sequence of video clips with captions depicting the necessary information. Aside from the information being accessible to people with hearing impairments, it would be hard to hear audio if the lobby area was noisy and because the repetitive dialogue would likely irritate staff working at the nearby Information Desk.

Valle de Oro Map/Brochure

A map exists showing the trails and facilities, but eventually a more detailed map/brochure will need to be developed.

Objectives

After interacting with this opportunity visitors will:
- Have had most if not all of their orientation and wayfinding questions answered, especially, "What is there to do here?" and "Where can I see wildlife?"
- Be excited about exploring the refuge;
- Feel comfortable in their ability to find their way around the site;
- Have all the information they need for planning and having their desired experience;
- Are aware that the refuge offers programs and stages events, and that they can get a schedule in the visitor center or sign up to get notices on-line.

Description and Concept

This is a simple map of the site with images of interesting features and people enjoying themselves, directions to the site, and other orientation and wayfinding information so visitors can find their way around on-site. The primary purpose is to provide basic orientation and wayfinding to and within the refuge and to market experiences at Valle de Oro NWR (this is the publication that is likely to be passed from friend to friend). One possible design approach is to create a 3-D illustration of the site from an oblique aerial perspective to use as a backdrop for the rest of the information. This allows people to be able to identify where they are based on features they can see rather than having to use a flat map, which many people cannot do. In addition a 'menu' of experiences based on time required should be included, along with suggestion about what a visitor should do if they have limited time.

Note: *Actual design and content is likely constrained by the USFWS template. If that is the case, and the constraints prevent designing an effective map/brochure, consider having the Friends Group take this project on.*

Primary Experience: Interior

Note: This section focuses only on the parts of the Visitor Center associated with the Visitor Interpretive Experiences.

Note: At this point in time the building has not been designed so some opportunities may present themselves due to the design of the building, such as the possibility of looking at roots of plants through a glass wall if part of the building was underground (which would be good for conserving energy required for heating and cooling), or the potential views available. Consequently, this information should be reviewed after the design is completed.

Note: Because of New Mexico's year-round good weather, some of the following exhibits could be designed to go outdoors.

In addition to presentations, programs and classes available in the Multi-Purpose Room, the visitor interpretive opportunities in the building include an Introductory Video and the exhibits in the Exhibit Hall. The Introductory Video will focus on providing Thematic Overview, while the exhibits will provide overview and detail.

One of the goals is for visitors to the refuge to experience nature in ways that motivate them to actively support the refuge and to inspire them to take an active role in resource conservation as part of a Connected Conservation Community. Consequently the interpretive opportunities in the Visitor Center should not be designed to tell the whole story nor be the target destination. Rather the exhibits should excite visitors about what they can see on the refuge, motivate them to explore the rest of the refuge, and facilitate that experience.

The Exhibit Hall contains the core of the interpretive experience at the Visitor Center. Its purpose is to communicate and reinforce the themes identified for the interpretive network to as many visitors as possible. To that end it should provide a variety of different access paths to the key messages in the form of different topics and media, with the intent of providing a large enough array of opportunities with multiple intellectual access points so that everyone will find something that captures their attention and imagination, and everyone has an intellectual access point. The intent is also to provide the opportunity to dig deeper into the stories that are presented in the Introductory Video.

Key aspects of approach to developing the concept for the exhibits include the following:
- An emphasis on connections and interrelationships, which is the reason the *Life Zones of the Middle Rio Grande* exhibit complex highlights connections between the zones, emphasizing that the natural environment is a continuum of different zones and habitats.
- An emphasis on the importance of water in general and the Rio Grande specifically, especially in relation to the cultural history of the area.
- A desire to connect with people from different cultural groups with history in this area.
- An emphasis on 'discovery.'
- An emphasis on exciting and inspiring visitors to explore Valle de Oro NWR in person as 'Detectives of the Landscape,' which requires them learning how to 'read' the landscape to find connections, signs of wildlife and other aspects of the land and its inhabitants.
- An emphasis on providing an interactive, multi-sensory experience.

Note: *Although the general concept for the Exhibit Hall has been developed, at this point in the process the array of variables – especially the final size and layout of the space - make it difficult to be highly specific about where certain pieces of information or exhibit components should be located, or how large they should be relative to other exhibit elements. Consequently, the design concepts in this plan focus on providing a menu of suggestions for stories to be included, location of those stories, and presentation strategies as a starting point for the designer to work with USFWS personnel to develop the designs.*

The center of the Exhibit Hall contains an exhibit complex with the working title of 'Life Zones of the Middle Rio Grande Valley' that features the major life zones found in the area (and perhaps appearing in the refuge). The exhibit sequence begins with the Upland Zone and proceeds through the Grassland Zone, Wetland Zone and Bosque (Riparian) Zone to the Aquatic Zone of the Rio Grande.

Exhibit elements within each zone include drawers, doors, flip plates and other means of 'discovering' different aspects of that zone using all senses. These are all elements where the information can be changed out periodically as a means of staying up to date and attracting repeat visitors. All aspects of the zone – plants, wildlife, fish, birds, humans, and the natural forces that continue to shape the land and its inhabitants – can be found in the array of strategies to emphasize that all occur in the same place at the same time and that they are connected, and to emphasize that humans are integrally connected to the life zones and to the refuge.

The integration of a variety of elements into a single exhibit reflects the holistic quality of nature and avoids the compartmentalization of information, which tends to be an obstacle in communicating interactions and connections. To avoid giving the impression of a vast quantity of information to digest, while at the same time motivating visitors to engage, much of the information will be hidden in drawers, recesses, flip plates and other reveals (strategies involving manipulation to find additional information) waiting to be 'discovered' as visitors 'discover' the life zones, the refuge and Native Nature. As noted previously, these are all elements that can be changed out periodically.

At the end of the continuum of zones is a second exhibit complex that uses the cultural history of the area as a vehicle for highlighting how different cultural groups have used the area and its resources over time. The chronology begins with Native Americans and proceeds through the coming of the Spanish, the coming of other EuroAmericans, through the present and into the future. The focus for each group is on how they depended on the natural resources of the area to sustain their quality of life, and how the Rio Grande played a key role in determining how they lived. Note that it will be important in presenting this information to avoid giving the impression that any group is 'gone.' Descendants of all cultural groups still live here.

A third exhibit complex focuses on how the quality of life in this area is being improved by actions taken by the USFWS related to Environmental Justice, by the community and the USFWS building the refuge, and by the people of Albuquerque and the USFWS working to create an urban area with pockets of native habitat in the form of Islands of Habitat, pocket parks, and Specialty Gardens. In addition to these three exhibit complexes, the exhibit hall contains the following:

- 'Pollinators' exhibit
- 'How are You Connected?' exhibit
- Children's Naturescape play area and Discovery Area
- Contemplation Zone

Audiovisual Program

Location
Multi-Purpose room.

Objectives
After viewing the program visitors will:
- Know all the major themes;
- Feel inspired to view the exhibits and experience the outdoor exhibits and interpretive trails;
- Feel inspired to explore the refuge.

Themes
All themes should be covered in this opportunity.

Description and Concept
The intent of the program is to provide a big picture overview of the key stories of the refuge and within that framework, to communicate the key themes (messages). Ideally the program would be viewed prior to experiencing the Exhibit Hall, but some visitors will arrive in the middle of the program and choose to visit the exhibits first. The program should be designed to work either way.

A variety of treatments can be used to present the desired information. One possibility is to use a chronological approach beginning with when the area was used by Native Americans. The purpose in presenting the cultural history is in part to tap into potential connections with viewers, in part to emphasize the role and importance of the Rio Grande in dictating cultural activity, and in part to emphasize the reliance on native flora and fauna through the ages, especially plants – for food, healing, dyes, building materials and a myriad of other uses. The emphasis on plants provides the backdrop for a focus on issues that could be important to residents due to the loss of native vegetation, such as the loss of pollinators. The chronology can extend into the future providing a vision for the refuge in years to come. That provides the opportunity at the end to focus on the different habitats that will be created on the refuge and the value of those habitats to different species of birds and wildlife.

Life Zones of the Middle Rio Grande Valley (Working Title)

Objectives
When visitors finish interacting with this exhibit, they will:
- Know all the themes;
- Be inspired to go out and explore the refuge;
- Be inspired to learn more;
- Be amazed at the variety of wildlife already supported by the refuge, even before it is fully developed;
- Understand the interconnectivity of all elements of the system, both biotic and physical;
- Understand how they are connected to the refuge and Rio Grande through their actions, and that they can have positive or negative impacts;
- Feel empowered to make a difference by engaging in stewardship behaviors.

Key Themes
All themes and sub-themes should be included. Note that this is an exhibit that can have elements reflecting work in Environmental Justice, so it will be a place to communicate Theme 5**:** The USFWS is an asset to the community.

Description and Concept
The exhibit is essentially a long narrow 'island' containing a continuous sequence of flat images and three-dimensional elements representing the sequence of life zones, which will be used as a backdrop to present information focused on the native flora and fauna, connections with other zones, and human impacts. The continuous exhibit island could be broken up by passageways within which could be interpretive elements focusing on stories to be discovered under the surface, such as clues regarding the geomorphology and artifacts from previous cultural groups, but that might necessitate making a passage so wide that it takes away from the intent of showing that that the zones are connected. To that end, if a passageway is created, the "land" should continue over the top to emphasize that the zones are all connected.

Information will be presented using a variety of strategies and media, and with the opportunity to use multiple senses, with emphasis on 'discovering' the life zones of the Middle Rio Grande Valley and of the refuge and what lives in each. This includes a significant number of opportunities to 'discover' information using 'reveals' (doors and drawers to open, flip plates, sliding windows, things to look into, etc.). Emphasis, as with all the exhibits, will be on providing brief snippets of information and then posing questions to stimulate thought rather than offering conclusions. To the extent possible, exhibit elements will be designed so they can be changed out easily to stay up to date and appeal to repeat visitors. The development of this exhibit in particular will require working closely with the USFWS, particularly those at the refuge, to continue gathering and assessing additional potential stories and information that could be included.

As a whole, the components in every zone should establish the following:
- The zone supports different wildlife than other zones because it contains different habitat;
- The refuge is in the zone or is linked to the zone through a web of connections;
- Because of those connections what happens in zones upslope from the refuge have impacts on it and potentially on the Rio Grande, which means protecting the Rio Grande and the refuge depends on actions in the local community.

Exhibit Complex Framework
Each zone will have, at a minimum, the following elements:

'Didjaknows'
Fun facts.

'What If?' Why? and 'Why not?'
These are questions posed on the outside of a door or other type of reveal, such as "What will happen to native plants and wildlife if global climate change continues?" The answer is on the inside. The answer should be visual if possible, but if text is required, it should be brief.

Who lives here?
These questions are posed on the outside of doors located on an image of something associated with birds or wildlife, such as a woodpecker hole, coyote scat, and badger holes. The identity of the organism is revealed upon opening the door, along with a tidbit of information about that particular piece of evidence, and how a visitor might find that piece of evidence out on the refuge.

Another approach is to use the question on the front of a reveal. Upon opening a reveal, the question is answered by "Depends. Pick a season." Visitors can then push a button to choose a season and see what organisms use it in what season and for what. The key concepts to convey are that some species of wildlife use resources from more than one zone, and that migratory birds and wildlife use it during specific seasons.

Why do I live here?
Some form of this question would be located on images of species of wildlife. A reveal would contain an answer that focuses on the link between the species of wildlife and habitat.

What's the Connection?
This is an image of something in one zone with a visual link to another zone and the question, 'What's the Connection?' A reveal of some type would highlight the connection between the two. For example, the aquatic zone could contain an image of a person fishing in the Rio Grande with the question "What's the Connection?" and an image of the Upland Zone on the outside of a flip plate. Upon opening the door the viewer finds out that contaminants and erosion from the Upland Zone can get into the river, causing negative impacts on fish and other species.

What's Going on Down There?
This exhibit element highlights what can be found underground in a zone, such as burrows, contaminants, the water table, artifacts from previous inhabitants, etc. Whenever something like a contaminant is included, if possible, actions being taken to combat the problem as part of the Environmental Justice program should be included.

What are We Doing?
This exhibit element would highlight activities of the USFWS or partners, such as research, habitat restoration, or activities associated with Environmental Justice.

During the design process, the exhibit designer needs to work with USFWS staff to develop each of these elements for each Zone featured in the complex. The following is a list of typical sensory stimuli (sights, sounds, smells, etc.) that can be used in developing those elements. The lists are not meant to be complete, but rather to provide a starting place for discussions. Selecting the sensory stimuli will be based in large part on what is visible at the time the exhibits are developed. This is one reason for the need for flexibility in exhibit designs – as new wildlife and plants come onto the scene, they need to be featured in this exhibit complex.

Uplands Zone

Plants typical of Upland Zone

Blue grama	Desert prickly pear	Bush muhly	
Sideoats grama	Chamisa	Alkali sacaton	
Desert Marigold	Broom snakeweed	Firewheel	
Winterfa	Soapweed yucca	Indian paintbrush	
Prairie sagebrush	Tree cholla	Feather dalea	
Creosotebush	Sand dropseed	Fourwing saltbush	

Wildlife typical of Upland Zone

Various sparrow species	American badger	Western diamondback	Various invertebrates (tarantulas, grasshoppers, etc.
Red-tailed hawk	Gunnison's prairie dog	NM whiptail	Harvester ants
Western meadowlark	Desert cottontail		
Mourning dove	Black-tailed jackrabbit		
Greater roadrunner	Rock squirrel		
	Kangaroo rats		
	Coyote		

Sounds and smells typical of Upland Zone:

Creosote bush (smells like rain)	swaying grass/wind through grass	insect mimicking a rattlesnake	Western meadowlark
sagebrush (smells bitter/spicy)	grasshoppers		Horned Lark
sweet, dusty earth	sparrows and meadowlarks		Various sparrows (savannah, vesper, grasshopper, etc.
blooming chamisa in the fall	rattling of a rattlesnake		Ravens
			Hawks/falcons (Red-tailed hawk; prairie falcons, etc.)

To be considered

1. Gunnison's prairie dogs are thought to be a keystone/key engineer species in deserts, providing habitat for other species (e.g., burrowing owls, rattlesnakes, badgers, etc.).
2. Impacts/improvements of vegetation and habitat restoration and presence of wildlife may have some Environmental Justice implications (e.g., vegetation may have cultural or medicinal significance to Natives).
3. This zone filters out sediments before reaching wetlands or other waterbodies.
4. The flora in this zone provides habitat for pollinators who travel the area, helping with nearby gardens and planting efforts.

Grassland Zone

Plants typical of Grassland Zone

Inland saltgrass	Chocolate flower	Various other sunflowers	
Little bluestem	Indian ricegrass		
Blue grama	Switchgrass		
Annual sunflower	Canada goldenrod		
James' Galleta	Various native sages		
Big bluestem	Various milkweeds		

Wildlife typical of Grassland Zone

Various sparrows	Harvest mice	Grasshoppers	Various reptiles
Red-tailed hawk	Pocket mice	Dragonflies	
Northern harrier	Coyote	monarch butterflies	
Red-wing blackbird	Cottontails	sulfur butterflies	
Western meadowlark	Striped Skunk		

Sounds and smells typical of Grassland Zone:

swaying grass/wind through grass	Call of sparrows	smell of sweet, dusty earth and fresh organic/wet earth	
rattling of a rattlesnake	Call of meadowlarks	Smell of wet grass	
insect mimicking a rattlesnake	Call of yellow-headed blackbirds	Smell of wet, rich soil	
unidentifiable critters running through the grass	Call of red-wing blackbirds	Call of Say's phoebe	
grasshoppers	Call of American kestrels	Call of cattle egret	

To be considered
1. Grasslands are rapidly being changed by the encroachment of woody and invasive plant species, thus degrading the habitat for grassland obligate birds, such as savannah and vesper sparrows and hawks like Northern harriers.
2. The decline of large areas of mesic grasslands near the bosque/water has caused the New Mexico meadow jumping mouse to become endangered.
3. Underground species include gophers, earthworms, various snakes and reptiles, small mammals like rats, mice, voles, etc.
4. Same considerations regarding Environmental Justice as for Upland Zone.
5. A 'didjaknow' could focus on how far a plants roots have to go down to reach water.

Wetland/Aquatic Zone

Plants typical of Wetland/Aquatic Zone

Inland saltgrass	Canada goldenrod	Yerba mansa	
Alkali sacaton	Marsh muhly	Seepwillow	
Goodding's willow	Baltic rush	Rio Grande cottonwood	
coyote willow	Various sedges	New Mexico olive	
Giant sacaton	Various bulrush	Various milkweeds	
Annual sunflower	Southern/Broadleaf Cattail		

Wildlife typical of Wetland/Aquatic Zone

Softshell turtle	Dragonflies		
Red spotted toad	Damselflies		
Spadefoot	Various spiders		
Woodhouse's toad	Various aquatic invertebrates (e.g., dragonfly larvae, boatmen, etc.)		
Bullfrog	Mosquitoes		
	Mosquitofish		

Sounds and smells typical of Wetland/Aquatic Zone

Creosote bush (smells like rain)	swaying grass/wind through grass	Call of western meadowlark	Sound of frogs and toads
Sagebrush (smells bitter/spicy)	grasshoppers	Call of horned lark	Sound of insects buzzing
Smell of sweet, dusty earth	sparrows and meadowlarks calling from posts and from the ground	Call of various sparrows (savannah, vesper, grasshopper, etc.	Call of geese and ducks, such as mallards and wood ducks
Smell of blooming chamisa in the fall	rattling of a rattlesnake	Call of ravens	Call of killdeer
Smell of cattails	insect mimicking sound of a rattlesnake	Call of hawks/falcons (Red-tailed hawk; prairie falcons, etc.)	Call of wood duck
Smell of water	Sound of birds and other critters moving in the water	Call of a red-winged blackbird	Call of long-billed curlew
Smell of mud	Call of American kestrels	Call of Say's phoebe	Call of cattle egret
Smell of wet, rich soil	Sound of flowing water	Call of a common yellowthroat	Call of white-faced ibis

To be considered

1. Wetlands are rapidly being changed by the encroachment of woody and invasive species or being drained for farmland or housing developments, thus degrading and eliminating the habitat for wetland obligate wildlife, such as beavers, muskrats, invertebrates that lay eggs in water, toads, and frogs.
2. Bullfrogs present an opportunity to focus on the impact of invasives and the impacts they have.
3. Impacts/improvements of vegetation and habitat restoration and presence of wildlife may have some Environmental Justice implications (e.g., vegetation may have cultural or medicinal significance to Natives).
4. Role of wetlands (kidneys of the earth) to filter out chemicals, minerals, sediment, and more before reaching rivers, thus improving the water quality of the river and groundwater.
5. Wetlands help recharge of aquifers by slowing water down so it has time to penetrate deeper into the earth.
6. Potential 'didjaknow:' Did you know that New Mexico has the least amount of surface water of all 50 states, as a percentage of its land mass (0.2%)?
7. A cutaway of the river showing fish and other organisms that live there could be used as a 'What's Going on Down There?'

Bosque Zone

Note: This zone will be very limited and not characteristic of what is adjacent to the refuge. No "forests" will exist on the refuge.

Plants typical of Bosque Zone

Rio Grande cottonwood	Various sedges		
Coyote willow	Various bulrush		
Goodding's willow	Annual sunflower		
Golden currant	Canada Goldenrod		
Alkali sacaton	Copper globemallow		
	Spectaclepod;		

Wildlife typical of Bosque Zone

Belted kingfisher	American badger	NM whiptails	
Northern flicker	Coyote	Western diamondback	
Hairy woodpecker	Rock squirrel		
Turkey			
Bald Eagles			
Great horned owl			
Screech owl			

Sounds and smells typical of Bosque Zone:

Smell of cottonwoods	Drumming of a woodpecker	Hairy woodpecker	Wet and dry sand
Decaying plant matter	Call of various woodpeckers		Mud
Sound of rushing water nearby	Call of an eagle	Downy woodpecker	
Creaking tree branches	Call of a kingfisher	Western wood-pewee	
Wind rushing through the leaves/trees	Honking of geese and ducks flying overhead	White-breasted nuthatch	Hermit thrush
Smell of sagebrush	Call of crows and ravens	Common yellowthroat	Spotted towhee
Call of toads and frogs	Unidentifiable critters rustling in the trees and understory brush	Cranes flying overhead	Northern flicker

To be considered

1. Southwestern willow flycatcher and western distinction of the yellow-billed cuckoo depend on the Bosque/riparian habitat (SWFL – willows; YBCU – cottonwoods).
2. Beavers and porcupine eat trees in the Bosque.
3. Porcupine climb and sleep in trees.
4. A possible approach to 'What's the Connection?' is to use an image of a person fishing in the Rio Grande with the question "What's the Connection?" that prompts visitors to open the door to find out that contaminants and erosion from the upland zone can get into the river, causing negative impacts on fish and other species.
5. A possible approach to 'What's Going on Down There?' is for visitors to walk into a cleft where they can discover the roots of different plants along with burrows and other signs of wildlife, including insects. The cutaway could also show how chemicals get into groundwater and then are carried a long distance from where they went into the ground.

A River Runs Through It (Working Title)

Objectives
When visitors finish interacting with this exhibit, they will:
- Know all the themes;
- Understand how the river has affected and continues to affect cultural activity, including your [the visitor's] life;
- Know that the natural resources of the area were important to the lifestyles of all cultural groups who have lived and do live in the area, including you [the visitor];
- Be inspired to learn more.

Key Themes

Theme 1: Native plants and wildlife are a valuable part of your quality of life, just as they have been for all the people that have lived in this area through time.

Theme 3: Water, because it is a critical component of habitats, has long determined patterns and quality of life in the Middle Rio Grande Valley.
    Sub-Theme 3-1: Water in all its forms has and continues to dictate and control the type and extent of cultural activities in the Middle Rio Grande Valley.

Theme 4: Everything in an ecosystem is linked. Impact on any one component has a ripple effect that causes impact on the habitats it supports and on other components of that ecosystem, including humans.
    Sub-theme 4-3: Humans can determine what organisms live and what die by impact on habitat. Those impacts ultimately affect humans since humans are a part of the ecosystem.
    Sub-theme 4-4: Because individual actions add up incrementally to significant impacts, you can play an important role in maintaining natural resources.

Description and Concept
One possible approach is to use a timeline as an organizer to highlight the different eras of cultural use, beginning with Indigenous Peoples and proceeding to present. Illustrations on the wall behind the exhibit should all be of riparian vegetation along the Rio Grande and ideally with glimpses of the river to reinforce the concept that the Rio Grande had significant impact on cultural activity throughout time. Three-dimensional objects and replicas of artifacts combined with some text could be used to help create an image of how each cultural group used and valued the natural resources. Information associated with each cultural group reinforces the images by emphasizing the integral relationship between people and the land and natural resources rather than providing an in-depth look at any group. The story of each cultural era could be communicated by focusing on one individual or a family to create a vehicle for telling a story. Understanding the history also helps visitors understand the relationships today between themselves, local communities and the refuge, and issues that stem from those relationships. The information would also be delivered in audio format for those with impaired vision.

Note: *It is important to make the human history, especially the older, traditional aspects of cultures, integral to the story so they do not seem quaint, distant and irrelevant. It is also important to present the different cultural groups as still be present today to avoid making it seem like something of the past.*

How are You Connected to the Natural World?

Location: This exhibit should be located so visitors have the opportunity to view all the exhibits before encountering this one so they are exposed to a lot of different ways that people in general are connected. One possible place for this exhibit is in the Contemplation Zone.

Objectives
When visitors finish interacting with this exhibit, they will:
- Be able to name at least 5 ways they are connected to and depend on natural resources of the area;
- Be motivated to help protect at least the parts of the natural world that contribute to their quality of life.

Key Themes

Theme 1: Native plants and wildlife are a valuable part of your quality of life, just as they have been for all the people that have lived in this area through time.

Description and Concept
Rather than telling people how nature benefits them in an urban setting, have visitors identify ways in which they are connected to and depend on the natural world. They could write them on notecards or stickers and hang or paste them up on a large visual depicting the myriad of natural resources used by people in the area. A version of this was used at Kenai NWR where youth were given the opportunity to write a notecard about how they were connected to the Kenai and then hang it for others to read. (Responses were put in a box so they could be reviewed by staff before posting them on the exhibit.)

Working Toward a Better Future (Working Title)

This exhibit complex focuses on three ways in which the USFWS is working with the people of Albuquerque to make a better future – creating the refuge, creating Islands of Habitat, pocket parks and Specialty Gardens in the city, and engaging in activities associated with Environmental Justice. Each component should include information on how a person can get involved and show people engaged in stewardship behaviors.

Objectives
After interacting with this opportunity, visitors will:
- Understand that the refuge is a result of efforts by the USFWS and partners in the city and county;
- Be excited about the future Albuquerque;
- Appreciate the efforts of the USFWS in increasing the quality of life of the residents;
- Be aware of what the USFWS is doing in the area of Environmental Justice.

Key Themes

Theme 1: Native plants and wildlife are a valuable part of your quality of life, just as they have been for all the people that have lived in this area through time.

Theme 4: Everything in an ecosystem is linked. Impact on any one component has a ripple effect that causes impact on the habitats it supports and on other components of that ecosystem, including humans.

> **Sub-theme 4-3:** Humans can determine what organisms live and what die by impact on habitat. Those impacts ultimately affect humans since humans are a part of the ecosystem.
> **Sub-theme 4-4:** Because individual actions add up incrementally to significant impacts, you can play an important role in maintaining natural resources.

Theme 5: The USFWS is an asset to the community.

Description and Concept: Building a Refuge Together
This exhibit should begin the story of the refuge when it was the Price Dairy and carry it through to what it might look like in 20 years. It should emphasize that the land was saved from development by local residents and groups. A timeline could be used as an organizer, with different benchmarks expected in the future forecasting the return of native plants, birds and wildlife. Emphasis should be on the concept that this is a project of the community and the USFWS rather than just a project of the USFWS, and on what can be accomplished through the actions of individuals.

Description and Concept: The Albuquerque of the Future
This should be a changeable space so new additions to the array of natural habitats created in Albuquerque can be highlighted along with those that helped in their creation, and existing and future projects can be displayed to recruit volunteers to help. The core of the exhibit would be the vision for the community as a place packed with Islands of Habitat, Specialty Gardens, and yards full of native vegetation and native birds and wildlife. One possible approach is to use an aerial image of the city as a centerpiece with images around the outside of the types of features that will be added over the next 20 years.

One possible component of this area could be an opportunity for visitors to listen to songs from birds that they could attract to their yard by planting specific vegetation, and then finding out how to do so.

Description and Concept: Environmental Justice
This should also be a changeable element to highlight new and future projects. Core elements would be images of projects already completed along with information on their impact. Without knowing exactly what types of projects it is difficult to suggest elements for this exhibit.

Pollinators Exhibit

Butterflies are good species to highlight in the pollinator exhibit because of their inherent attraction power   **Image courtesy of USFWS**

Objectives

When visitors finish interacting with this exhibit, they will:

- Understand that pollinators are very important to production of food that they like;
- Understand that populations of pollinators, especially honey bees, has declined significantly in recent years;
- Feel empowered and motivated to plant a Pollinator Garden.

Key Themes

Theme 1: Native plants and wildlife are a valuable part of your quality of life, just as they have been for all the people that have lived in this area through time.

Theme 4: Everything in an ecosystem is linked. Impact on any one component has a ripple effect that causes impact on the habitats it supports and on other components of that ecosystem, including humans.

> **Sub-theme 4-3:** Humans can determine what organisms live and what die by impact on habitat. Those impacts ultimately affect humans since humans are a part of the ecosystem.
> **Sub-theme 4-4:** Because individual actions add up incrementally to significant impacts, you can play an important role in maintaining natural resources.

Description and Concept

One possible approach is to make at least part of this an interactive exhibit by linking changes in the populations of specific pollinators to the plants they pollinate. For example, one side of the exhibit could have a variety of pollinators, each associated with a graph of population numbers over the past few decades, and each with an opportunity to manipulate the population so it goes up or down. On the other side of the exhibit would be an array of plants that people value in some way, such as for food or health. If a person changes the population of a pollinator, one or more of the images on the right either fades (if the population goes down) or gets brighter (if the population increases). Brief snippets of information, perhaps hidden by a reveal, provides information on the role of the pollinator, the issues due to population decline, and what can be done. Participants won't know what plants are affected by what pollinator populations without manipulating the exhibit.

A Child's View (Naturescape Playground)

Design Concept

This is an area for children that contains larger than life models of species that can be found in the refuge. A family opportunity can be developed by creating a set of questions and answers associated with the plants and wildlife depicted by the models. Another opportunity for this area is a "Where's Waldo" type of opportunity where children have to search 'landscapes' and/or images depicting different life zones found in the refuge to find different species or signs of species (identified in a key). The wildlife should be engaged in an activity reflecting whatever brought them to that zone. Ideally the scene could be changed to reflect different times of the year, with a resultant change in species. The exhibit can be made more elaborate by creating the option of using some type of trigger (such as a button) to find out why a species is in a particular zone. The messages are that the refuge supports a lot of f wildlife, even if you don't always see them, and that different habitats attract different species.

Contemplation Zone and Associated Opportunities

This is an area with a view to the refuge (along with spotting scopes, binoculars and bird books) where people can sit and relax and simply contemplate what they have experienced in the Exhibit Hall and/or on the refuge. It could have a computer so people could look up information on a subject they encountered in the exhibits. Ideally, coffee would be available in this space. Note that this would be a good location for the *"How are You Connected to the Natural World'* exhibit.

Walking the Talk (Working Title)

This is a series of small panels at appropriate locations around the facility highlighting the conservation measures used in the design and construction of the building, such as low flow water fixtures, taking advantage of natural insulation (only if the building is partially buried), and similar measures with emphasis on those that can be adapted for use by homeowners. The actual topics will be determined by the design of the building.

Primary Experience: Exterior

This section focuses on interpretive opportunities outside the building, beginning with opportunities near the exit doors in the rear of the building. The map below shows the planned trails and infrastructure to support the visitor experience. Interpretive opportunities include:

- Thematic Overview Panels at the edge of the patio in the back of the Visitor Center
- Interpretive Trails with Discovery tools such as Apps and publications
- Demonstration Gardens Self-Guided Walk
- Guided Tours

Note: Valle de Oro NWR currently has a Discover Nature App and a Discovery Agents App that are part of the interpretive opportunities on the site.
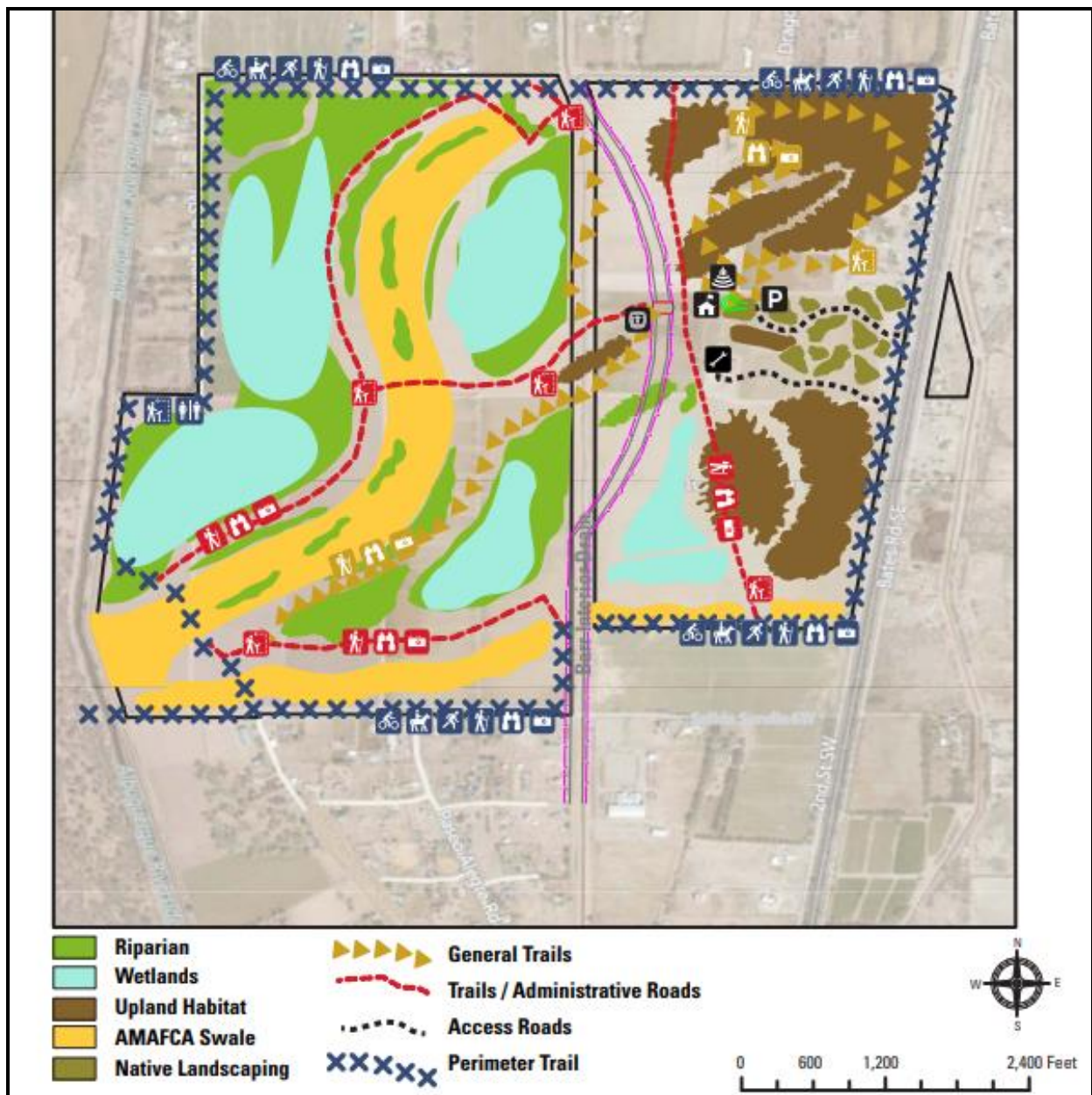
Refuge View Interpretive Panel Cluster

The information offered on these panels includes thematic overview of the key stories. A site orientation panel highlighting site features and opportunities should also be a part of this cluster.

Location
Edge of patio oriented toward the bosque.

Objectives
After visitors interact with this opportunity they will:
- Be inspired to learn more about the refuge and stories associated with the cultural and natural history of the area;
- Feel reassured in their ability to find their way around;
- Interested in coming back on a regular basis to see the changes;
- Be motivated to explore the refuge.

Key Themes
Ideally all themes would be included because these are thematic overview panels

Description and Concept

Note: The Site Orientation Panel is the same as the one described under the Arrival Experience except for a change in the location of the 'You Are Here.'

The basic concept is to use a sequence of images of people walking along the Rio Grande, first just along a footpath and then along the Camino Real de Tierra Adentro from its beginning up through present. Each figure represents a cultural group, beginning with Native Americans and progressing through the Spanish, then other EuroAmericans to people of today. Associated information focuses on how each cultural group depended (and continues to depend) on the natural resources of the area, including the river. The last part of the panel focuses on the transformation of the site from a Dairy to a refuge as it might look in 20 years. Information associated with that part of the exhibit focuses on the partnership between the community and the USFWS as the key to creating the refuge.

One possible addition is a changeable panel where you could mount a succession of images taken from that location at the same time every year (and every season) so visitors can 'discover' the changes.

Interpretive Trails with Discovery Tools

Objectives
After experiencing the interpretive opportunities on the trails, visitors will:
- Be motivated to become a Detective of the Landscape (this could be a badge or certificate);
- Want to visit at times wildlife are more active;
- Be aware that a lot of wildlife uses the refuge.

Themes
All major themes could be covered in this publication, but the emphasis would be on the following:

Design Concept
Ideally the trail system would be a nested loop of trails (people prefer loops to there-and-back trails except when a trail accesses the recreational experience people want to have, such as angling). A spur trail would access the bosque and the trail system along the Rio Grande. The innermost loop should be fully accessible and access each of the habitats on the refuge. Shaded benches, perhaps with devices that can spray a fine mist of cool water when triggered (misters), should be located along the trails. Ideally, these stopping points would be in depressions to help mitigate noise issues and minimize visual intrusion of the built environment to maximize focus on nature. Interpretive opportunities keyed to whatever a person is looking at when sitting on the bench could be created using a chip in the bench tied to cell phone technology.

Specific interpretive detail would depend on the exact location of the trails in terms of the features available, but in general, interpretation would focus on the following:
- Relationships of birds and wildlife to different habitats.
- The type of habitat that could be planted in a visitor's yard depending on location within the Albuquerque Metropolitan area. Information accompanying the landscaping advice would focus on the advantages of using native vegetation, such as not needing much water and attracting songbirds.

The key difference in the loop trails from an interpretive perspective is in the information delivery strategies. On the innermost loop more obtrusive strategies, such as panels, could be used. Interpretation on the other loops would be delivered using less obtrusive strategies, such as trail guides, and tours and apps on cell phones. The Friends Group has already developed a QR Code Trail focusing on the future of the refuge, and a Discover Nature App with wildlife information, an interactive GPS coordinate game and information about other Middle Rio Grande Valley refuges. When it comes time for these to be updated they may need to be tweaked to better reflect the theme hierarchy and objectives. The following are additional strategies for helping visitors discover the refuge.

Discovery Tool 1: Sense-ational Discovery Guide
This strategy focuses on using clues addressing all senses to help visitors discover evidence of the past, of the forces that shaped and continue to shape the area, and of the flora and fauna that live here. The actual device can be anything easily carried and used as an identification guide and check-off list, such as a small booklet or set of cards with pictures on a ring. It could also be set up on a cell phone but the hard copy version of it should be available. Whatever is used, it should contain descriptions and images of features to look for and check off. Each item has two columns to check – one for experiencing the feature in an exhibit or learning about it on a sign, and one for experiencing the actual feature. For example, if the user learned how to identify woodpeckers by the shape of their holes and/or the sound of their drilling in the visitor center and then saw the holes or heard the drilling while on the interpretive trail he or she could put a mark in each column. Experiences should involve all senses, such as smelling bark, hearing a bird call, identifying a tree by the feel of the bark, etc. Two versions of this strategy could be developed. The simpler one would be available free of charge. A more detailed version, perhaps with information on where to find different items on the list, could be an item for sale in the Bookstore. Explorer's Backpacks could contain a copy of the publication.

Discovery Tool 2: Interpretive trail guide

This publication provides detailed information on the trails – length, time required, difficulty, sights and opportunities – plus interpretive information.

Discovery Tool 3: Interpretive Trail with beacons

This strategy uses beacons along the trails to let people know that information is available on a cell phone at that particular point in the trail. The information can be similar to what is on the other devices, but this could be a specific sequence of stops designed to act together.

Discovery Tool 4: Explorer's backpack

These are daypacks full of tools for exploring the environment, such as inexpensive binoculars, identification keys for plants, birds, wildlife and animal tracks, a magnifying glass, and any other items that would help youth discover nature on their own. It could also contain a simple camera with 12 pictures so youth can take pictures of their favorite features. Those pictures could be submitted in a contest with the best from each camera posted on a bulletin board in the Visitor Center. This could be a way of encouraging return visits, visits by other family members and relatives, etc. The backpack could be sold or checked out.

Roving Interpreter

This is a trained interpreter who would answer visitor questions and engage visitors in conversation regarding the refuge and its features. At a minimum a roving interpreter (preferably more than one) should be used during events and peak visitation periods.

Objectives

Specific objectives will depend on the conversation that takes place, which in turn depends on the visitor's questions and the location on the refuge. Regardless of the specific objectives, after taking part in this opportunity, visitors will:
- Feel welcome at the refuge;
- Be motivated to learn more about the refuge and its habitats;
- Feel more comfortable talking with people associated with the refuge.

Key Messages

Depends on the questions and opportunities presented by sensory stimuli.

Demonstration Gardens Self-Guided Walk

Location: Adjacent to the Visitor Center.

Description: This is a collection of gardens, each designed to focus on one aspect of cultural and/or natural heritage. Possible gardens include the following:
- Pollinator Garden
- Butterfly Garden
- Scent Garden
- Songbird garden
- Wetland/water garden
- Native plant garden
- Pueblo Garden (dyes, healing, ceremonies, bait, art)
- Healing herb garden (medicinal, curanderas, cooking)
- Xeriscape garden

All should use only native plants. The purpose of these Demonstration Gardens is to show visitors examples of what they can plant in their yards. Associated interpretive information would focus on the value of the plants in the gardens, such as for habitat for wildlife, sources of traditional medicines, sources of spice and foods, sources of dyes and materials used in cultural practices, and other uses. In addition, visitors can obtain a guide that provides instructions on planting these specific gardens and other native habitat in their yards, and how to become a Certified Backyard Habitat through the Friends group. The refuge could also give away seeds and plants that would go in any of these gardens to encourage visitors.

Note: Consider partnering with a local nursery so visitors can purchase plants for these gardens when they leave. Also consider offering vouchers for people to obtain plants from local nurseries. The advantage of having plants available at the refuge is that it may be the point in time the visitor is really excited about planting a garden, and it does not require any extra effort or much time. Given that storing plants would require space and time, offering plants may be something that occurs on specific days.

Note: Although some of these gardens may not provide critical habitat for native wildlife, they are 'Native Nature' that visitors might be willing to plant in their yards because they value what it offers. That would represent a Stepping Stone of Engagement in that they are planting 'Native Nature' in an urban setting.

Note: The Certification Program must take into account what a person is capable of doing in the yard (or lack of yard) that they have. It may be better to call it a Certified Backyard Conservationist with different levels. A visitor could attain the first level simply planting a native plant in his or her yard. (Note that the Friends Group has already started such a program.)

Objectives
After taking part in the associated interpretive opportunity, visitors will:
- Be motivated to plant a garden similar to one of the Demonstration Garden;
- Feel empowered to make a difference regarding conservation of natural resources;
- Know that pollinator and butterfly populations are endangered due to loss of habitat;

- Know that loss of pollinators can have a negative effect on their quality of life;
- Feel a connection (intellectual and/or emotional) to at least one of the gardens;
- Know that Native Nature has and continues to enhance the quality of life for many people (ideally for the visitor also).

Themes
The actual themes will depend on the type of garden. For example, some gardens focus on habitat for species like pollinators or butterflies while others focus on cultural use of plants. As a whole, the walk through the gardens with the interpretive opportunities should be able to communicate the following themes:

Theme 1: Native plants and wildlife are a valuable part of your quality of life, just as they have been for all the people that have lived in this area through time.

Theme 2: Wildlife, along with all other biological organisms, depend on their specific habitat to survive.
Sub-theme 2-1: Native wildlife depend on native plants as part of their habitat. (Plus the corollary theme: If you want to support native wildlife you need to plant native vegetation.)
Sub-theme 2-2: The habitat necessary to support migratory birds and wildlife extends the entire length of their migration routes.
Sub-Theme 3-2: Wetlands are important to our quality of life. (Water Garden)

Theme 4: Everything in an ecosystem is linked. Impact on any one component has a ripple effect that causes impact on the habitats it supports and on other components of that ecosystem, including humans.
Sub-theme 4-1: Native wildlife depend on native plants as part of their habitat. (Note: This is also sub-theme 2-1.)
Sub-theme 4-2: All parts of an ecosystem, including the forces that shaped and continue to shape it, are necessary to keep the system healthy along with all the habitats it supports.
Sub-theme 4-3: Humans can determine what organisms live and what die by impact on habitat. Those impacts ultimately affect humans since humans are a part of the ecosystem.
Sub-theme 4-4: Because individual actions add up incrementally to significant impacts, you can play an important role in maintaining natural resources.

Description and Concept
The interpretive information supporting this self-guided walk should be available in at least a few formats to increase the probability that all members of the target audiences have a format available to them that they are comfortable with and have no difficulty accessing the information. That means that Spanish and English versions should be available in all formats. Given that technology is changing so quickly, rather than identify specific information-delivery strategies, the recommendations will be for types of strategies.

At a minimum, the information should be available through cell phone technology in an audio format and by way of a publication (that visitors can recycle when they leave). For the gardens that provide habitat for specific species of wildlife (pollinator garden, butterfly garden, songbird garden, etc.), visual identification keys should also be available, both in the publications and as visuals using cell phone technology.

It is important in the design of the interpretive strategies to stay away from the encyclopedic approach, which would manifest itself in pure identification keys combined with facts about how plants were used or what wildlife associates with what habitat. The preferred approach is to tell stories that contain the same information. For example, instead of simply noting that the Monarch butterfly is associated with milkweed, tell the story of the Monarch's migration from the butterfly's perspective – what does it look for when seeking food, or a place to nest?

Guided Walks

These could focus on a variety of topics, but all should be developed based on themes to communicate. Some or all of these might fall under the heading of 'Environmental Education,' but all could also simply be interpretive walks. The following are examples of guided walks that could be developed to reflect the themes (you are already doing similar walks, but may need to tweak the information to reflect the theme hierarchy). This is not meant to be a prescriptive list nor to include all possibilities.

- **Beginner birder walks.** These should be designed to introduce novices to birdwatching. Beyond identification, information should focus on the habitats a bird is likely to be associated with and why.
- **Noises in the night.** This depends on whether you have (or can hear) natural sounds at night, including bird calls (like owls). The point is to provide opportunities for people to get more comfortable with (and less fearful of) nature.
- **Wildlife Discovery walks.** These focus on evidence of wildlife, such as tracks, bird calls, bird feathers, woodpecker holes, evidence of plants being eaten, etc. Emphasis is on the fact that just because you don't see wildlife doesn't mean it isn't there. This can be coupled with similar walks in a 'Detective of the Landscape' series that could involve a badge or some other recognition if participants can 'detect' and identify a certain number of species of wildlife. These walks should also emphasize that specific species of wildlife are associated with specific habitats. One suggestion from the internal planning team was to create a Wildlife CSI program.

Departure Experience

The Departure Experience typically involves another visit to the restrooms and often a visit to the Nature Store if one is available. The primary purpose of the information network supporting the Departure Experience is to move visitors easily back to the place where they began their on-site experience (Arrival Stations, Visitor Center or trailhead) so they can leave, while at the same time marketing additional interpretive experiences on the refuge to encourage return visits and off the refuge so visitors can continue their experiences with nature using other Stepping Stones of Engagement available in the community, at partner sites or on-line.

The potential future experiences on the refuge to be marketed would be primarily non-fixed opportunities such as guided tours, events, and programs. These would be marketed by posting time-sensitive information near the Orientation Panels, and in the Visitor Center near the restrooms. Off-site experiences could be marketed in part by an Area Orientation Panel in the Arrival Structures, by a more detailed opportunity within the Visitor Center when it is built, and by a publication identifying opportunities at partner sites. All would highlight interpretive and nature-based opportunities at other locations in the Albuquerque area, including USFWS sites. In addition, programs such as the Certified Backyard Habitat program being developed by the Friends Group should be marketed to help motivate visitors to consider planting native vegetation in their yard.

Area Orientation Panel

Location
A version of this should be inside the Visitor Center located with information on upcoming events and programs, and a version outside at the edge of the Staging Area so it is easily available to people leaving the refuge (it should face toward the Visitor Center).

Objectives
After interacting with this opportunity, visitors will:
- Be inspired to visit other similar sites, including nearby National Wildlife Refuges;
- Know where they are in relation to major roads and towns in the area.

Design Concept
The same keys to effective Site Orientation Panels also apply to Area Orientation Panels - limit information to that which is useful; orient it in the direction people are facing when reading the map (if possible); and use a 3-dimensional perspective. At a minimum the Area Orientation Panel should contain the following:
- Mileages and travel times to destinations in the area, including key partner sites and nearby national wildlife refuges;
- A 'You Are Here;'
- North arrow.

One possible approach is to use a stylized three-dimensional illustration of the area from an oblique aerial perspective for the map. Key locations and features would be enlarged to reflect significance and make it easy for users to find key locations. Note that this is not a strategy for wayfinding, but rather one for marketing. Fixed maps have limited value for wayfinding over any distance.

Publications

Publications supporting the Departure Experience could include:

- Guide to Natural Places in the Albuquerque Area (develop with partners). This would be more extensive than the existing Planting Passport, and should continue to expand as Islands of Habitat are developed. With that in mind, one approach to Islands of Habitat is to try to create ones in different biomes so visitors have a variety of different Islands of Habitat to visit.
- How to Attract Birds and Wildlife to Your Yard. A publication on birdscaping (Make Your Yard Bird-friendly with Native Plants) already exists. Additional publications focusing on butterflies and pollinators could be developed. This could also include information on the Certified Backyard Habitat program once it is developed.
- Creating your Personal Naturescape. These publications don't focus on a particular biotic organism, such as birds, butterflies or pollinators, but rather focuses on specific habitat types.
- USFWS Blue Goose Passport Program to encourage visits to other national wildlife refuges.
- Sign-up sheets for getting more information.

Return Travel Experience

The key is to guide visitors back to major road they are likely to be familiar with. This is important for visitors not familiar with that particular part of the Albuquerque area because you don't want them to remember the last part of the experience as being one of frustration. Many people will either know how to return or will use GPS, but some will need directional signage.

Directional Signage

Locations
At key decision points (intersections) potentially encountered by visitors trying to reach main highways from the refuge, or locations where they can use public transportation, such as the nearest bus stop and the closest Railrunner station.

Objectives
After encountering a directional signage visitors will
- Be able to quickly make a choice as to what direction to go with confidence.

Design Concept
The design is dictated by existing standards. The information should be limited to direction, and possibly distance if needed.

Post-Visit Experience

Depending on information a visitor obtains during their visit or that he or she can get off the web, post-visit experiences can occur without the refuge being involved. Visitors can plant Specialty Gardens, visit other sites in the area that feature Native Nature, and engage in other activities on their own. Ideally, the refuge would like a communication link to send out information on upcoming events, programs, volunteer opportunities, and updates on what is happening at the refuge. Visitors will have the opportunity to provide an email address for receiving information on programs, events and other items of interest, such as joining the Friends Group.

The refuge and Friends Group already have a strong social media following so it is possible that an ever-expanding network of connections might happen naturally. That can be helped along by using strategies to encourage people to tap into Facebook and Instagram, such as:
- Providing a series of 'didjaknows' from the interpretive opportunities that people can share with their friends to start conversations about the refuge.
- Setting up photo ops that people post on Facebook or Instagram.
- Setting up photo contests using social media.

Building Program for the Interpretive Center

Introduction

Preliminary plans for Valle de Oro National Wildlife Refuge include building a facility to support visitor experiences in addition to housing administrative staff and supporting other functions of the refuge. Based on the description under Alternative B in the draft Environmental Assessment, the Visitor Center will house an Exhibit Hall, an Indoor Classroom, Administrative Offices for the USFWS and partners, and restrooms, which will also be accessible from the outside. Alternative B also calls for constructing an amphitheater and an outdoor classroom on refuge grounds. Either could be the focal point of a visitor's experience, rather than the Visitor Center, which suggests providing orientation and wayfinding information to access these sites upon arrival, without requiring entering the Visitor Center.

This building program addresses those aspects of the building associated with Visitor Interpretive Experiences, with emphasis on the juxtaposition of those spaces that would result in optimal visitor interpretive experiences

Definitions

The following definitions are used in this section:

Line-of-sight: The direct line along which the visitor is facing.

Field of Vision: The cone of vision encompassing the area 30 degrees to either side of line-of-sight.

Wayfinding information: Information to help a visitor move through an environment, such as directional signage.

Orientation information: Information that helps a visitor understand where he or she is in relation to other elements on a site. A map typically is used to provide orientation information.

Experience (trip) planning information: Information that helps a visitor plan his or her experience at a site.

Interpretive information: Stories relating to the cultural and/or natural resources of the site.

Basic function of the facility

The building program will include spaces serving 3 primary groups – staff working on the refuge (office and support space); visitors coming for a recreational (including interpretive) experience (Visitor Center space); and those coming for an organized program, such as children on a field trip and people coming to attend a meeting (Multi-Purpose room). All three groups should have dedicated access and exit doors from the outside with associated walkways accessing parking lots and other sites on the refuge. They also should all have dedicated restrooms, with the administrative area also having shower facilities.

Separate entrances and exits and restrooms minimize congestion in any one area and also separates school children from other visitors to the refuge.

Although this section pertains primarily to the interpretive aspects of the building, it is important to note that support spaces are critical for the effective functioning of the facility. The following have been requested by staff at the refuge:

- Catering kitchen
- The volunteer area (an area for partners is noted in the Building Program)
- Resource library (this could be part of the Contemplation Zone)
- Employment opportunities
- Outdoor gear and associated storage space
- College readiness work stations
- Computer / technology lab where community members could download/upload photos and sound recordings from the field
- Coffee shop

Visitor Center Space

Within the context of a typical visitor experience to the site, the purpose of the Visitor Center is to meet a visitors' basic needs and serve as a portal into the rest of the refuge experience. The function as a portal suggests an exit from the back of the building so visitors can access the refuge directly without having to backtrack to the entry area, and suggests multiple views of the refuge from the back end of the lobby and from the Exhibit Hall to motivate visitors to continue their experience in the refuge proper. Visitor needs include restrooms, drinking water, and trip planning, orientation and wayfinding information. The interpretive opportunities in the building provide a basic interpretive experience for those now choosing to venture into the refuge proper, but the primary intent is to motivate visitors to continue their interpretive experience outside while providing them with a basis for understanding interpretive information offered elsewhere on the site. The building will also likely contain a Nature Store operated by the Friends of Valle de Oro NWR. A Nature Store is typically part of a visitor's Departure Experience, unless the store sells items that support the on-site experience, such as an Explorer's Backpack, in which case it should be located so it can easily be a part of the Arrival Experience also.

A key to providing the most effective support for visitor interpretive experiences lies not only in the opportunities and services offered in each of these areas, but also in the sequence of opportunities. Consequently, the location and juxtaposition of the spaces is critical. For example, interpretation is an optional part of the experience most visitors want to have when visiting a site like Valle de Oro NWR. Restrooms, drinking water, experience (trip) planning, orientation and wayfinding information are not optional. Fulfilling those needs is paramount to creating a situation where visitors are willing to engage with interpretive opportunities. Consequently, the sequence of visitor-related services and opportunities must begin with fulfilling visitor needs. Because the visitor's on-site experience begins and ends outside the facility, the following information should guide not only the layout and basic design of the building, but also the surrounding landscape and associated information opportunities.

Juxtaposition and Purpose of Spaces in Visitor Center

The following information has been organized using the typical continuum of a user's on-site experience, beginning with the Arrival Experience.

Arrival Experience

In this document the Arrival Experience refers specifically to the arrival in the parking area if traveling by vehicle, or the arrival in the front of the Visitor Center if traveling by foot, bicycle or other non-motorized means. Regardless of how visitors arrive, they should all have access to a source of orientation and wayfinding information prior to entering the Visitor Center (see Figure 1). The source must be highly visible and along the route from the parking area to the Visitor Center so visitors do not have to go out of their way to access the information. Because of the need to be a visible source of information, a kiosk or similar structure is typically used to provide this information.
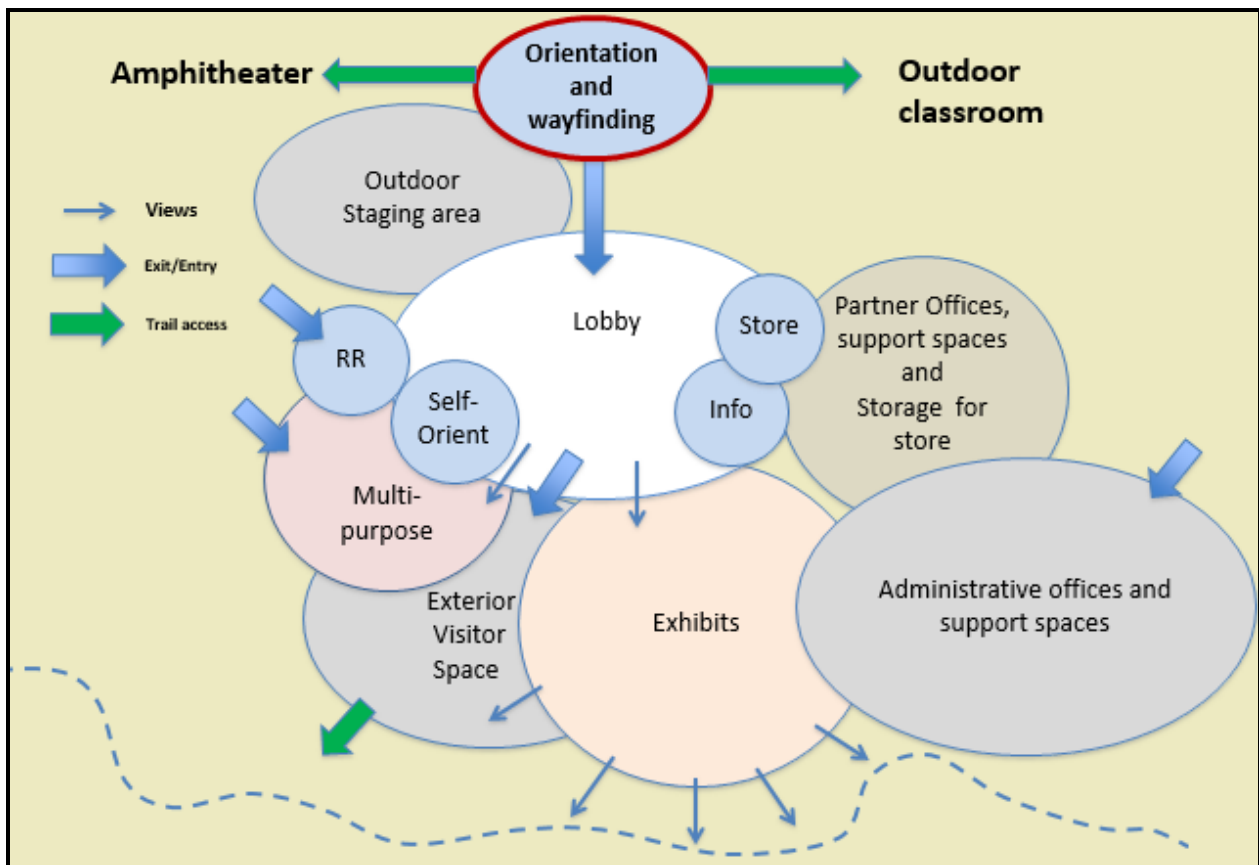
Figure 1: Exterior Orientation and Wayfinding Information

The exterior orientation and wayfinding information supports visitor experiences when the Visitor Center is closed, with the goal of helping those seeking the amphitheater, outdoor classroom, outdoor restrooms or the refuge proper to access those locations without entering the Visitor Center, or backtracking from the entry area. To achieve this goal, trails to those locations should be connected to the point where the orientation and wayfinding information is available, which should be far enough from the building entry to minimize congestion.

Educational Groups: School children should be able to transfer from the bus to an outdoor (covered) space that serves as a staging area for arrival and departure (See Figure 2).
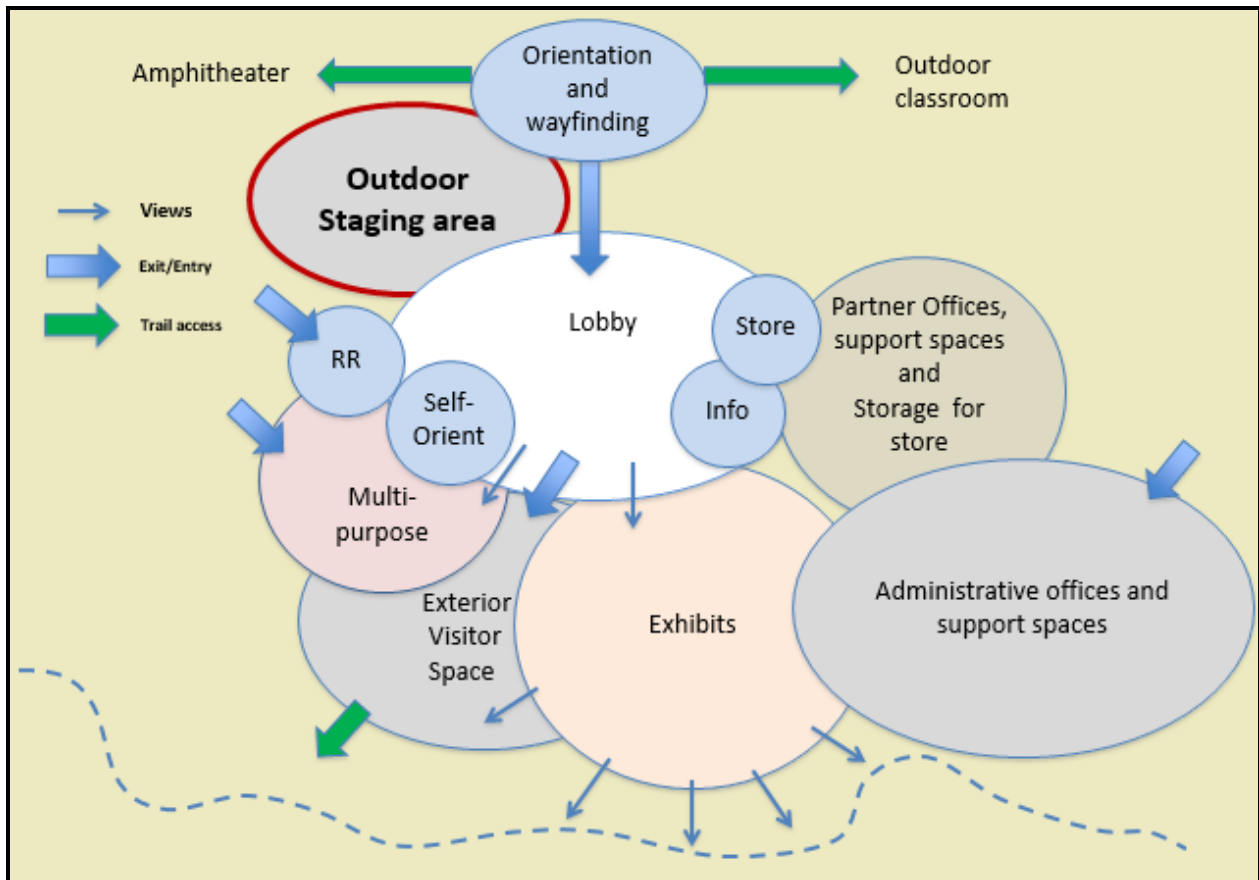

Figure 2: Outdoor Staging Area

From there they can access the Multi-Purpose room (see Figure 3) through a separate entrance, or access outdoor spaces set up for programs, such as the amphitheater and outdoor classroom.

Note: The Outdoor Staging Area can be located either side of the entry, but the restrooms need to be located on that side as well so the children can access them through an outdoor entry, and the multi-purpose room should be located on the same side for the same reasons. If the outdoor classroom is always the first place school groups go after leaving the staging area, consideration should be given to locating the staging area, restrooms, multipurpose room and outdoor classroom on the same side of the entry.
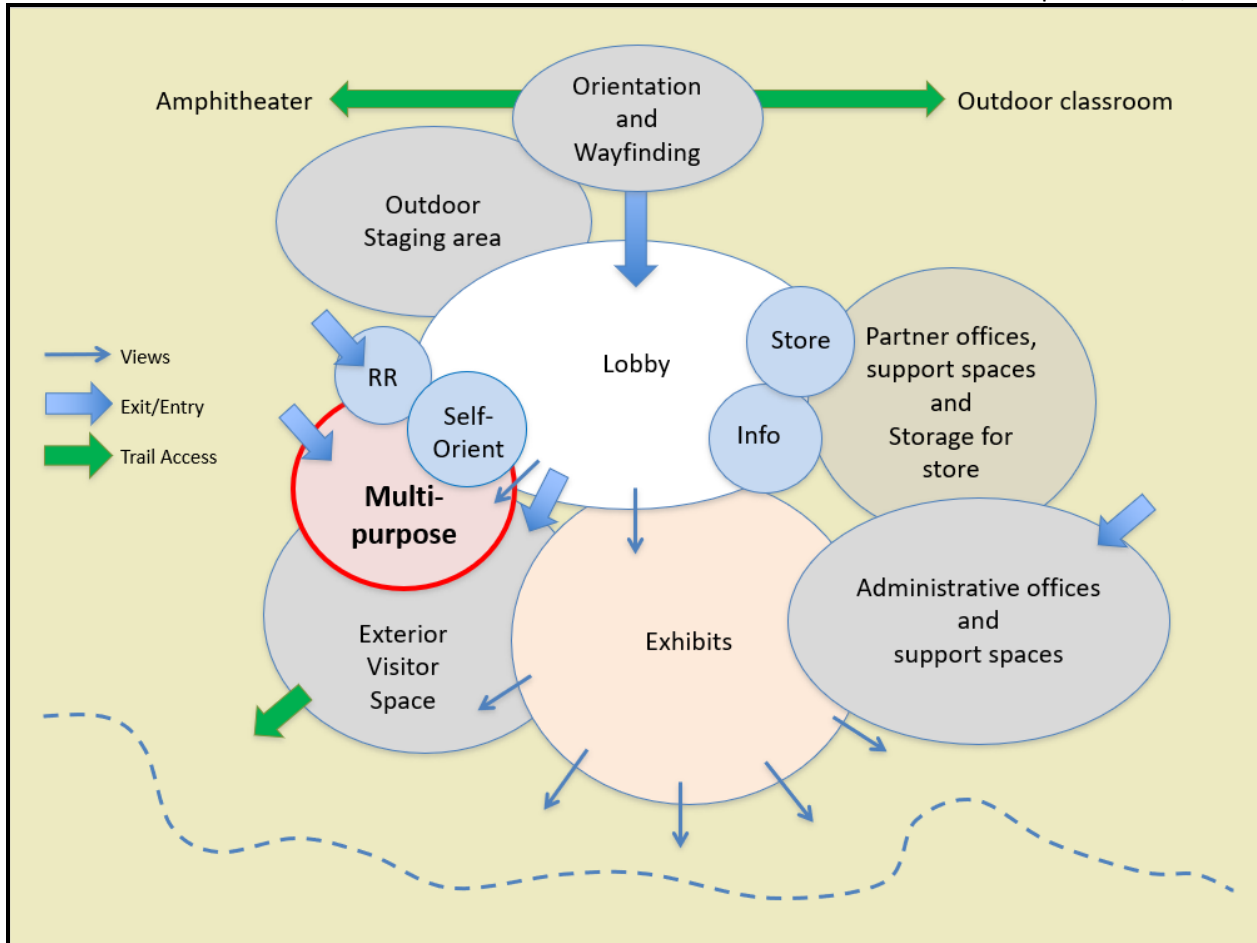
Figure 3: Multipurpose room

Visitor Center: Lobby

Immediately upon entering the Visitor Center (see Figure 4), visitors must be able to discern the following services and opportunities, which means signage or other visual evidence that is located within their field of vision:

- Location of restrooms
- Location of orientation and wayfinding information – self-serve
- Staffed information desk
- Nature store
- Entry to Exhibits (Exhibit Hall)
- Entry to Indoor Multi-Purpose room / classroom / meeting space

As noted in Figure 4, the restrooms should be available immediately upon entering the lobby. Upon exiting the restrooms, visitors must be able to quickly re-orient themselves to the space, especially in regards to the location of the information desk and the self-serve information station that offers experience planning, orientation and wayfinding information because that information is typically the highest priority after the restrooms. Ideally, those entering the Visitor Center area to attend a function in the Multi-Purpose room will already have noted the entry before using the restroom. However, that

can't be assumed so directional information to the Multi-Purpose room should be within a visitor's field of vision upon exiting the restroom unless the entry to that space is clearly visible as they exit.

The lobby area between the information desk and Exhibit Hall serves as an entry to the Primary Experience – either beginning with the Exhibit Hall, Multi-Purpose room (to view the Introductory Video), or the refuge proper – so this part of the lobby should have direct access to these 3 areas. It can also serve as a decompression/resting zone to facilitate the transition from the initial arrival that involves having needs met, and the initial part of the Primary Experience, which ideally includes Thematic Overview. Experience (trip) planning would be a likely activity in this area. It could also serve as the transition point from the desired experience to the exit experience, providing a contemplation zone, access to the restrooms, access to the Nature Store, and access to information that facilitates extended learning through visiting similar sites in the area and motivating visitors to return to engage in special events and programs.
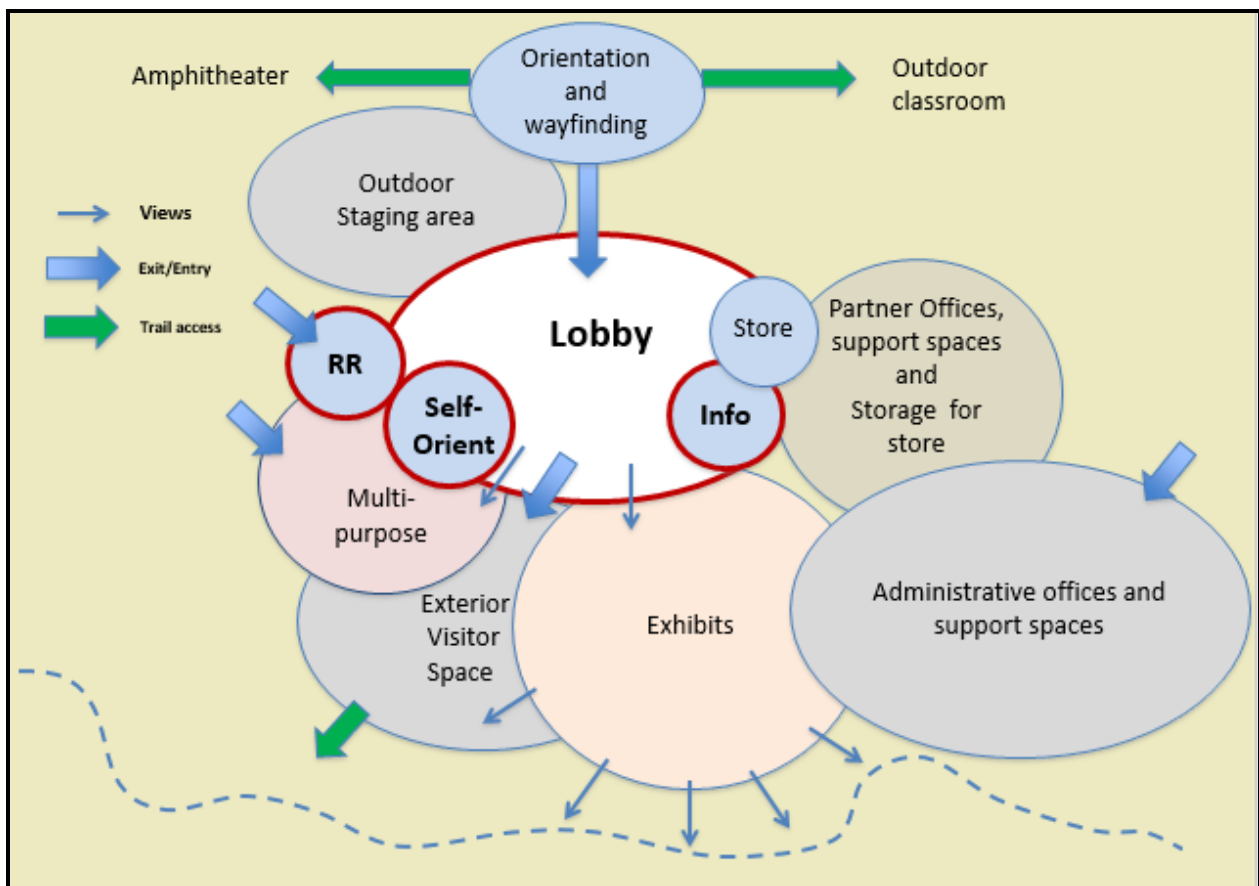

Figure 4: Lobby

Visitor Center: Exhibit Hall

The sequence of interpretive experiences within this area begins with Thematic Overview and proceeds to an 'Executive Summary' of the stories told on the refuge. The purpose of the Thematic Overview experience is to provide a basis for understanding interpretive information on the refuge, and to motivate visitors to visit the refuge proper. To facilitate that goal, visitors in the Exhibit Hall should have visual access (through windows) to the area just outside the building that ideally contains additional visitor opportunities, such as a deck or patio with shaded places to sit, access to Demonstration Gardens

and interpretive opportunities associated with those gardens. Visitors must also be able to easily access the exterior area, but without compromising the experience within, which is likely to happen if the Exhibit Hall has an exit with direct access to the outside area. One possible solution is an access to the outdoor area directly from the lobby area closest to the access to the Exhibit Hall, which increases the probability that visitors will be aware of that opportunity prior to entering the Exhibit Hall (see Figure 5). However, signage indicating access to the exterior area may be needed in the visitor's line-of-sight as they exit the Exhibit Hall to remind them of that opportunity.
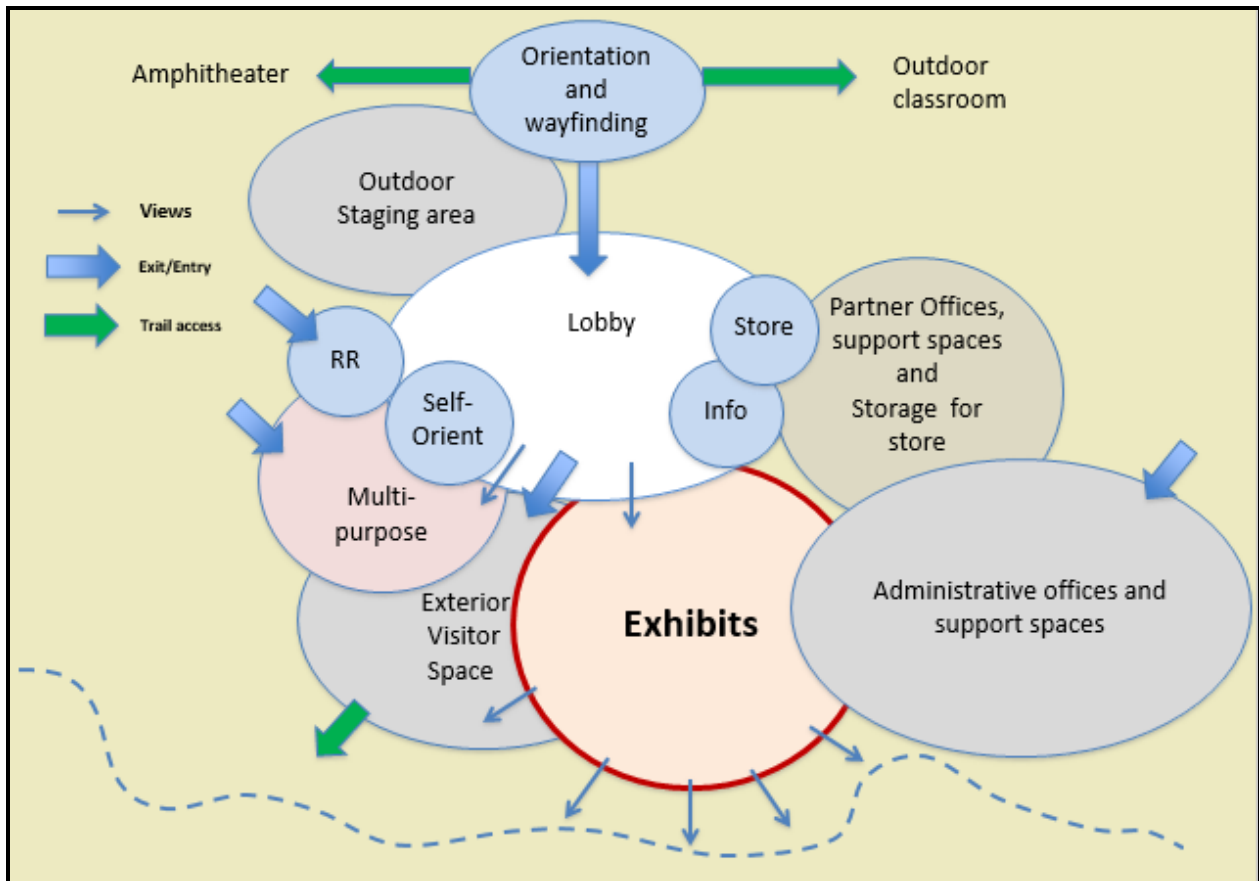

Figure 5: Exhibit Area

Exterior Visitor Space

The purpose of this space is to provide the transition between the building experience and the experience on the refuge proper. It cannot be assumed that visitors accessing this space have already decided to visit the refuge proper, so the goal of interpretive opportunities in this space is, in part, to motivate visitors to continue their experience in the refuge proper. Visitors in this area will have direct access to interpretive trails, and to trails to the amphitheater and outdoor classroom (see Figure 6).
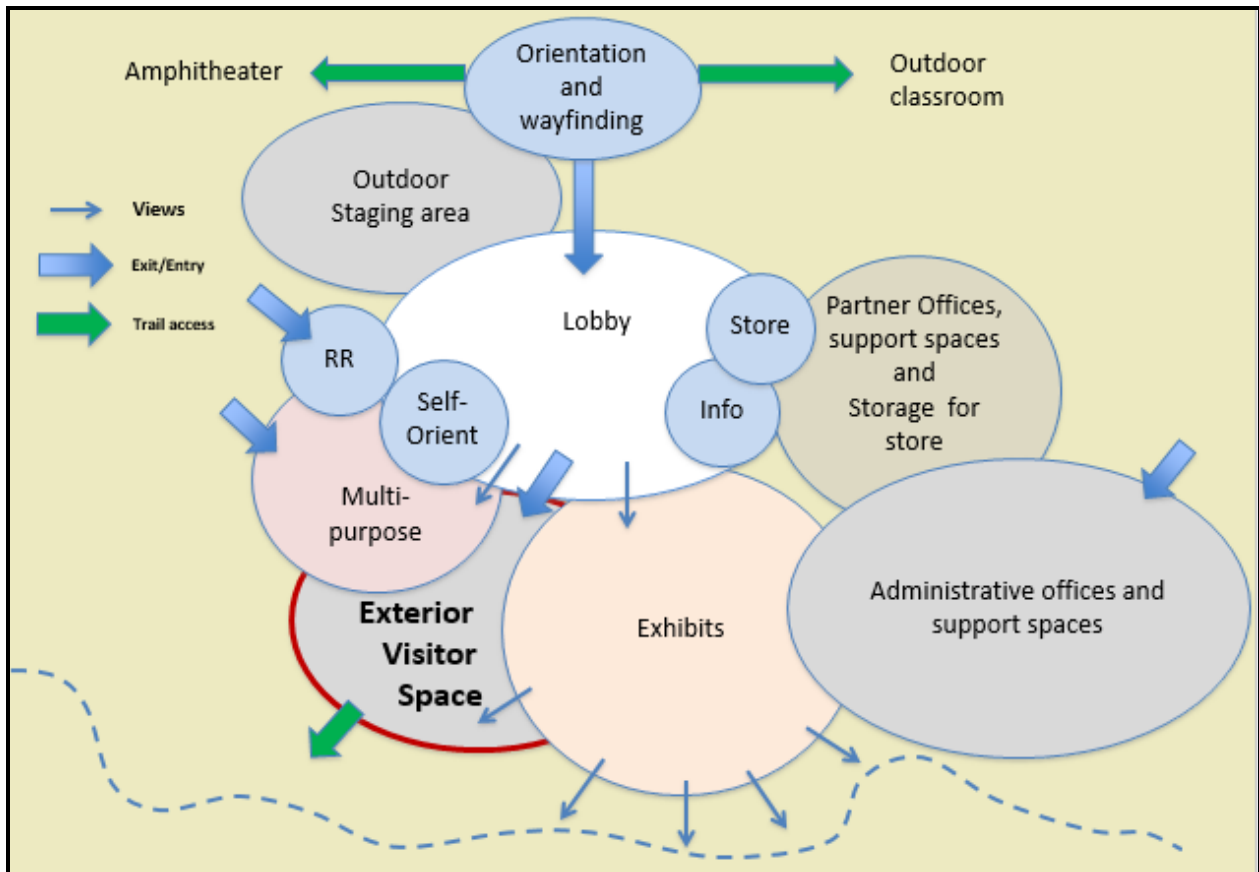

Figure 6: Exterior Visitor Space

Departure Experience

Preferably, visitors to the refuge proper will exit through the Visitor Center to take advantage of the Nature Store (see Figure 7). If they do exit through the facility, they are likely to use the restrooms. Somewhere along this continuum should be an opportunity to market future events and programs along with other sites with similar opportunities and messages.
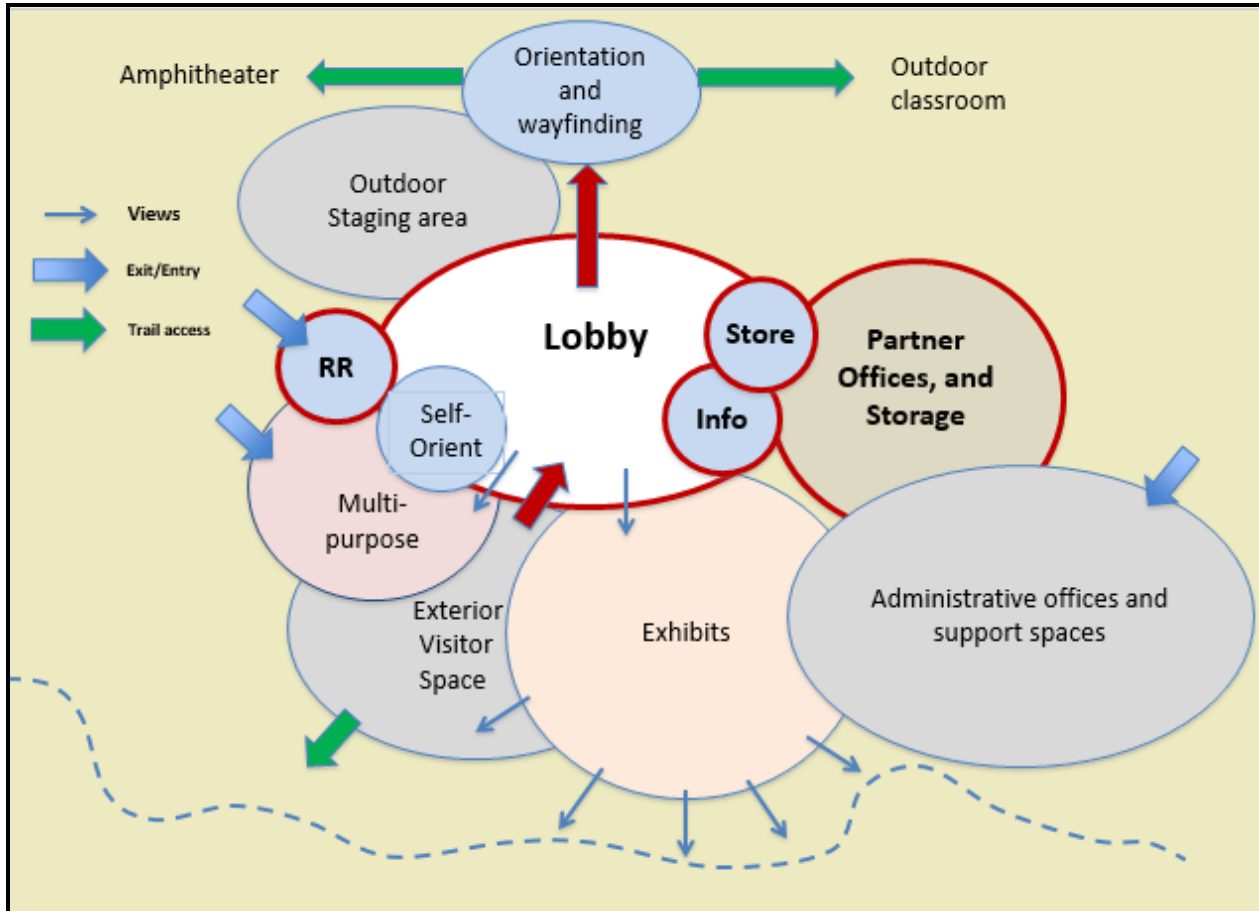

Figure 7: Exit route

Action Plan

Introduction

The following is a recommended course of action for implementing the Visitor Interpretive Experience Plan for Valle de Oro NWR. It contains the interpretive elements to be developed and other actions that should be taken to create the desired visitor experiences. It is predicated on the following:

- The new Visitor Center is scheduled to be done in fall of 2019.
- Some time may elapse before all parts of the site will look like the wildlife refuge
- The goal of creating a Connected Conservation Community (the refuge is not being developed due to the need for habitat, but rather as a vehicle for creating a Connected Conservation Community). One of the keys to achieving this goal is to become highly visible in a positive way, and to become valued by the residents of the Albuquerque Metropolitan Area, especially those living in the Mountain View Community.
- Visitors can have a great experience without interpretation, but not without orientation and wayfinding information, so orientation and wayfinding are higher on the priority list.
- A need to establish and maintain a good communication link with residents.
- Staff time and resources are close to being maxed out.

Phase 1: Gain Visibility and Create a Good Visitor Experience

Phase 1 contains actions that:

- Can be accomplished relatively quickly;
- Help create a good visitor experience before the visitor center is complete, which can then be the basis for creating a good visitor *interpretive* experience;
- Increase visibility of the refuge and the USFWS;
- Establish value for the refuge and USFWS within the Albuquerque Metropolitan area, especially the Mountain View community.

Phase 1 should start immediately, with many of the actions continuing rather than ending at the end of Phase 1. Note that the process for designing and construction a Visitor Center is already underway.

Note: This assumes that the Apps already developed for the refuge will continue to be offered.

Note: The following are not arranged in any particular order. Priority within a phase will be the decision of the USFWS Regional office and Valle de Oro NWR staff based on budget, staffing and other factors.

1. **Create a mechanism for evaluating events, major projects and programs and then conduct the evaluation.** In general, events and programs are positive in that they bring visibility and help build a relationship with residents. That does not mean that all events and programs are of equal value. They take staff and volunteer time and resources, which is currently essentially maxed out, so it is crucial that they bring the highest return on that investment. Criteria should be established for evaluating existing events and programs and proposed major projects and

then evaluating them to determine is some should be eliminated. The criteria could be a list of questions such as the following:

- Does the event / program / project result in positive visibility?
- Does the event / program / project build relationships with target audiences?
- Does the event / program / project help establish value in the eyes of target audiences?
- Does the event / program / project attract non-traditional users of refuges?
- Does the event / program / project include opportunities to communicate key messages?
- Does the event / program / project make progress towards goals and objectives?

To establish priorities, a scale needs to be associated with each question because all of the events and programs offered in 2018 would probably receive a 'yes' answer to each question, yet all of them are not equivalent in terms of return on investment. This is perhaps the highest priority because the resources and staff time are fully committed, and implementing the plan will require time and resources on other projects. Even if no programs are eliminated at this time, creating a priority list will help streamline future decisions.

2. **Continue Environmental Education programs.** These provide a lot of return on investment as long as they continue to focus on communicating key messages and removing barriers that impede accomplishing goals (such as a fear of natural nature by urban residents). EE programs can help reach goals of the Urban Wildlife Refuge Program, the National Wildlife Refuge Program and the USFWS by:

   - Building strong relationships with teachers;
   - Creating opportunities to communicate key messages;
   - Establishing value for the USFWS by the community;
   - Increasing visibility of the USFWS and comfort with USFWS staff, including residents being able to distinguish them from law enforcement;
   - Increasing visibility of and interest in the refuge;
   - Establishing reasons to visit the refuge on a regular basis. This is not necessarily by bringing school children to the refuge as part of a class, although that is important, but rather establishing reasons to come other than with a school group, such as to engage in Citizen Science projects and recreational opportunities, and for students to bring their families and show them all the 'neat stuff.'

   However, EE programs should be evaluated based on the goals of the refuge and the USFWS, on the themes for the interpretive program, and on the return on investment.

3. **Continue with tours of the refuge – bird tours, 'discovery' tours, etc.** These have the same benefits as the Environmental Education programs.

4. **Stage a Family Fishing Day (another event):** This is possible now that the Riverside Ditch is being stocked with rainbow trout. It is also one of the Big 6 Recreational Opportunities, and perhaps more importantly, one that is in the spotlight at this time.

5. **Expand the Program focusing on planting Islands of Habitat and Specialty Gardens in the local community (it is already being done on a limited scale)**. This strategy provides the USFWS opportunities to achieve multiple desired outcomes before the Visitor Center and refuge are fully functional, including the following:

   - Builds positive visibility and trust with the local communities;
   - Establishes that the USFWS is *not* law enforcement and that they are approachable;
   - Builds personal relationships with residents, including lines of communication;
   - Creates small pockets of native wildlife habitat;
   - Provides an opportunity for people to take conservation actions, such as by planting a pollinator garden, which could trigger a 'Behavior-Attitude-Behavior' sequence that may result in people practicing a higher level of stewardship;
   - Creates opportunities for children (and adults) to get involved in Citizen Science Projects;
   - Builds interest in what is happening at the refuge.

   The Program should include developing associated curriculum, interpretive and outreach strategies. The actual Specialty Gardens and Islands of Habitat will be considered by some in the community as benefits regardless of any associated information. Ideally, these are all planted with the use of volunteers, especially Islands of Habitat in schoolyards. If school children get involved it is an opportunity to have one-to-one interactions and to convey key messages during the process, especially those focusing on the critical relationship of wildlife to habitat. The outreach strategies focus on providing school children and volunteers seeds and directions for planting similar spaces in their yards. This should be accompanied by the opportunity for residents to request USFWS staff to come and check on their personal Islands of Habitat and Specialty Gardens. People who plant them should have the opportunity to engage in Citizen Science Projects that involve keeping track of wildlife that use these habitats.

6. **Work with the local and state transportation agencies to install clear directional signage to and from the refuge**. Interpretation is an option; orientation and wayfinding information is a need. Visitor opportunities on the refuge are already offered, so upgrading the quality of the orientation and wayfinding information will immediately upgrade the quality of a visitor's experience.

7. **Develop a sign plan for the refuge and install directional signs as needed in conjunction with building and trail design and construction.**

8. **Develop the Site Orientation Panel.** This may have to be a temporary version that can be easily updated to reflect changes.

9. **Train volunteers and staff to be roving interpreters.** This is the quickest and easiest way to provide interpretation using a strategy that can be adjusted on the spot to accommodate different audiences, and updated and modified overnight. (Consider hosting a Certified Interpretive Guide training.)

10. **Create an InterpVan and an array of associated props and use it to offer impromptu interpretive opportunities off-site.** This has the same benefits as the program to develop Specialty Gardens and Islands of Habitat.

11. **Develop a traveling exhibit focused on how the refuge is anticipated to develop, and the opportunities it offers now and in the future.** This is a tool for giving presentations in the nearby communities. It is also one of the easiest strategies to customize based on audience and update as necessary. (This assumes the USFWS has cultivated opportunities to give presentations about the refuge.)

12. **Create the 'Refuge View' interpretive site with some of the recommended opportunities.** Initial opportunities should include a Site Orientation Panel, a Recreating Safely Panel, and an opportunity that gives visitors an idea of the condition of the site when the project was started and the vision for the site in the future. This strategy should be updated every year with a photo taken from the same location every 365 days. The Thematic Overview Panels should be planned for, and can be installed at any time. However, many of the other actions in Phase 1 have a higher priority than Thematic Overview panels.

13. **Develop a temporary Arrival Station with staging area(s), restroom facilities, parking and a Site Orientation Panel.** This will upgrade the Visitor Experience prior to the completion of the Visitor Center. Locating the station some distance from the construction site will reduce safety issues.

14. **Work with the transit authority to create a bus stop at the refuge.**

15. **Work with local government to create a safe crossing of 2ⁿᵈ Street by pedestrians.**

16. **Develop the Explorer's Backpack.** This can be used outside the refuge as well, and could help start the process of making urban children more comfortable with aspects of nature with which they are currently unfamiliar.

Phase 2: Develop Initial Interpretive Program

Recommendations in this phase assume the Visitor Center and interior exhibits have not yet been completed. The focus is on interpretive strategies that do not require as much time to develop as the Visitor Center, such as interpretive trails.

Note: The tours from Phase 1 (and prior to this plan) are a part of the Interpretive Network. The following recommendations assume those guided tours will continue.

1. **Develop the interpretive trails and associated interpretive opportunities.**

2. **Design the Area Orientation Panel to make visitors aware of other similar opportunities in the area.** Although this could be developed in Phase 1, it is important to develop a visitor experience at the refuge that is attractive before simply sending people elsewhere.

3. **Develop interpretive opportunities (possibly temporary at this point) associated with the different 'Zones' of habitat based on the themes and interpretive strategies identified in this plan.**

4. **Develop temporary Specialty Gardens on the site with associated information on how a visitor can develop a similar garden, and with a simple guide that contains interpretive information.** Since the Specialty Gardens will be proximate to the new Visitor Center, they probably cannot be developed until construction has been completed. However, these gardens can be effective in generating interest and motivating visitors to plant similar gardens where they reside.

5. **Develop the Sense-ational Discovery Guide.**

Phase 3: Build Visitor Center and All Associated Interpretive Opportunities

This phase focuses on completing the Visitor Center and interior exhibits. It should also include a review of the evaluation of events, programs and major projects completed in Phase 1 to ensure that they integrate well with the new Visitor Center. The results will likely require modification and/or elimination of some events, programs and major projects.

Appendix A: Definitions

Understanding the following terms will be useful in understanding this document:
- Visitor Interpretive Experience Plan
- Visitors
- Urban Wildlife Refuges
- Stepping Stones of Engagement
- Native Nature
- Transition Zones

Visitor Interpretive Experience Plans

Up until very recently, an 'Interpretive Plan' was the document that was typically produced to guide development of an Interpretive Program, which includes all the exhibits, interpretive panels, publications and similar interpretive opportunities for a site or facility. While such plans can identify opportunities that communicate desired messages to target audiences, they often fail because they do not take into consideration the experiential context in which they must function.

Most good interpretive planning models used today reflect the need to take target audience, goals and objectives, constraints, opportunities, and themes into account when selecting information delivery strategies and content. However, they still treat the array of strategies – the Interpretive Program as a whole – as the focal point of the plan. Although any interpretive planning effort should result in identifying the array of interpretive opportunities to develop, the approach should be to first identify the ideal *visitor experiences* (ones that by their nature would benefit from effective interpretive opportunities) from the perspective of those developing the interpretive program, and then use those experiences to determine what interpretive and other information to offer. Such experiences also have to be ones that target audience are willing to buy with their time, which requires knowing your target audiences beyond basic demographic information. Using the visitor experience approach ensures that you develop a plan, labeled a 'Visitor Interpretive Experience Plan, for a complete information network that begins with reaching your target audiences where they are – physically, emotionally and intellectually – and taking them where you want them to go by using a linked combination of trip planning information, orientation, wayfinding and interpretive opportunities. It also ensures that you identify barriers to the desired experiences, such as facilities that aren't fully accessible, so you can address those barriers within the context of developing your interpretive program.

In sum, people today buy *experiences*. Consequently, the desired product to guide development of an interpretive program is a Visitor Interpretive *Experience* Plan (VIEP), which uses desired audience experiences as the frameworks for determining the interpretive, outreach, orientation, wayfinding, and trip planning information to develop and actions to take to facilitate experiences that will attract, hold and communicate effectively with target audiences, whether on or off-site.

Visitors

The goal of the network of interpretive opportunities is to forge an emotional/intellectual connection between a member of a target audience and nature in general, and wildlife refuges and their associated resources specifically. Although a visit to a refuge might be the most effective vehicle for creating such

connections, it is not the only one. In other words, people don't have to physically step foot on a refuge to be termed a visitor. The term 'visitor' in this document is applied to anyone engaging with a Stepping Stone of Engagement, such as an Island of Habitat, or the Valle de Oro website. Note that the goal of urban refuges is not to increase the number of visitors, no matter how they are identified, but to convert every 'visitor' into a member of the connected conservation community. For many, that will require a visit to a natural area, such as a refuge. This is an important distinction for Valle de Oro NWR because it is quite small, so it cannot sustain a high level of visitation without having negative impacts on the wildlife.

Urban Wildlife Refuges

"To garner broad support for conservation, the U.S. Fish & Wildlife Service must provide a reason, and opportunities, for urban residents to find, appreciate, and care for nature in their cities and beyond. Therefore, engaging our urban neighbors, and fostering a sense of stewardship, reflects the heart of the Urban Wildlife Conservation Program."

In 2010 the USFWS released the publication entitled, <u>Conserving the Future</u>: Wildlife Refuges and the Next Generation, which contained the Service's vision for the National Wildlife Refuge System. They followed up by establishing the Urban Wildlife Conservation Program in 2012, which paved the way for establishing 8 pilot Urban Wildlife Refuges in 2013, of which Valle de Oro is one. The overall goal of these designated refuges is to create Connected Conservation Communities. The Service also established Urban Refuge Partnerships and Urban Bird Treaty Cities. Valle de Oro has the distinction of being an Urban Refuge Partnership an Urban Refuge, and an Urban Bird Treaty City.

Designated Urban Wildlife Refuges are within 25 miles of a population of 250,000 or more, but Urban Wildlife Refuges are defined by more than proximity to urban areas. They were established to *"...create a connected conservation community by providing inspiration and opportunities for urban residents to find, appreciate, and care for nature in their cities and beyond."* The task of engaging urban dwellers and fostering a sense of stewardship among them is a key difference between traditional U.S. Fish and Wildlife Service (USFWS) refuges and Urban Wildlife Refuges. That goal is reflected in the following Standards of Excellence established to guide management of these refuges:
1. Know and Relate to the Community
2. Connect Urban People with Nature via Stepping Stones of Engagement
3. Build Partnerships
4. Be a Community Asset
5. Ensure Adequate Long-Term Resources
6. Provide Equitable Access
7. Ensure Visitors Feel Safe and Welcome
8. Model Sustainability

Wildlife and associated habitat necessary for survival are still the highest priority on Urban Wildlife Refuges, in part because they *are* a part of the National Wildlife Refuge system and must present an accurate picture of what the USFWS wants the conservation community to support, but also in part because without them an Urban Wildlife Refuge could not fulfill the primary reason for which the Urban Wildlife Conservation Program was created and Urban Wildlife Refuges designated, which is to create a connected conservation community.

The location of refuges in this program reflect the belief that the make-up of the desired conservation community must be more than just traditional users of refuges, which consist primarily of those engaged in wildlife-dependent recreation, such as hunting, fishing, wildlife observation and wildlife photography. To be successful, the desired conservation communities must include non-traditional audiences living in urban areas. Urban Wildlife Refuges are seen as a gateway to exposing those audiences to the value of nature, of natural areas, of a specific refuge, and by extension, to the larger network of National Wildlife Refuges in a way that leads to the development of a conservation community that supports conservation, refuges and the USFWS.

The USFWS can take numerous actions that will lead to the local residents valuing the refuge and the agency. Examples include providing job skill training to youth, providing enriching programs, providing a Community Garden, giving away native plants for residents to plant in their yards, providing a community meeting space, offering recreational opportunities valued by residents and supporting community events. All could help make progress toward a favorable attitude toward the refuge and agency, but are unlikely to achieve the other major goal of Urban Wildlife Refuges, which is to create a connected conservation community. None of those actions in themselves are likely to instill a desire among target audiences to conserve natural and cultural resources to the point they overcome barriers to begin practicing stewardship behaviors.

The typical approach to modifying visitor behavior in regards to conservation is to focus on changing attitudes towards conservation with the expectation that behavior will then be modified to be consistent with attitudes. This is more likely to work with youth because their attitudes are still being shaped. However, by itself, this approach can fail for a number of reasons, the most common being barriers to engaging in the desired behavior. Douglas McKenzie-Mohr in his book Fostering Sustainable Behavior notes two examples in his own life, both of which involved moving to Canada and an associated change to a colder climate. Upon arriving he bought a composter and set it up in a shed in the back. When the snow started to fall he dutifully trampled a path to the shed to dispose of compostable waste, until the snow got too deep, at which point he threw the compostable waste in the garbage. In another example, instead of walking, bicycling or taking public transport to work, he chose to take a taxi because the cost of the taxi wasn't much more than the bus and he could travel on his own schedule rather than adapt to the bus schedule. In both cases the barrier to engaging in the sustainable behavior – too much effort to move the snow and too much inconvenience for taking public transport – negated the positive attitude (and strong drive) to sustainable behavior. With that in mind, it is important to look not only at opportunities for education – through interpretation, environmental education and public outreach – but also at the barriers that make it difficult for members of the target audience to engage in the desired behaviors. Minimizing or eliminating those barriers increases the likelihood that visitors will – at least in some small way – increase their practicing of sustainable behaviors.

Most members of audiences targeted by the USFWS at Valle de Oro NWR are unlikely to engage in sustainable behaviors even if they have a positive attitude toward such actions due to the increased cost in money and/or time (barriers). For those that are supportive of conservation, removing such barriers, such as by offering free native plants to plant in their yards, may result in achieving the desired impact. That is one reason it is critical to identify barriers to engagement as quickly as possible and remove them to increase the likelihood that interpretation and environmental education will have the desired impact on visitor behavior.

In the research paper *Best Practices for Creating and Sustaining Engagement with Urban Communities: Recommendations for the U.S. Fish and Wildlife Service* by Mimi Kaplan, the following specific policies were recommended for overcoming barriers and engaging audiences:

1. **Build strong relationships with the community, *in* the community**
    Building strong relationships may be a lengthy process given typical mistrust of government agencies, and it may take actions not directly related to managing a refuge. As noted in the paper, *Best Practices for Creating and Sustaining Engagement with Urban Communities: Recommendations for the U.S. Fish and Wildlife Service,* "Making connections with an urban community and making public lands relevant to them requires understanding that activities that urban residents want may not be directly related to the refuges at all" (Kaplan, pg. 22). The paper points out that nothing can be done without gaining the trust of the community, and convincing them that the refuge, refuge staff, members of the Friends Group and volunteers are an asset may require helping with activities the *community* deems important. In other words, although some activities the community desired may not appear to have a direct connection to conservation, they may be the critical first step in the pathway to an active conservation community. This requires refuge staff, members of the Friends Group and volunteers who support the refuge to leave the refuge and engage with community members within their space – not the refuge space.
    In addition to working with members of the community, the paper suggests working with community groups as a means of exploring how those groups can be allies in conservation and community engagement. The policy recommendation emphasizes that in all meetings the refuge staff should focus on how they can be a community asset *as defined by the community* – not by the USFWS.

2. **Identify barriers to participation in conservation activities both on and off the refuge, and ways to address and overcome these barriers.**
Participants in Kaplan's study noted that distance between the refuge and residents, lack of public transportation, lack of information about the refuge, belief that people aren't allowed on refuges, discomfort with nature and lack of diversity of refuge staff are a few of the barriers that affect public participation. These and other such barriers must be addressed to achieve the highest level of participation possible. The paper has several suggestions for removing barriers, including hiring interns and students from the community to increase the diversity of staff while providing youth employment, and scaffolding programs, which means sequencing programs to begin where the audience is able and willing to begin and then progressing, step-by-step through a series of programs designed to move students – physically and/or mentally – to a desired end point. Each program builds on the programs before. For example, giving a program in the natural surroundings of the community and progressing to programs on the refuge to address discomfort with nature.

3. **Establish meaningful and beneficial partnerships**
Not only are partnerships the cornerstone of the USFWS Urban Wildlife Conservation Program, they have also proven to be essential to successfully engaging with urban communities. Kaplan's study identified two types of partnerships that were essential: Partnerships with other conservation organizations and partnerships with community organizations already connected with residents. Partnerships with other organizations provide the opportunity to reach people who might not otherwise think to visit the refuge. Partnership with community organizations provides access to an

already established pipeline to people in the community. In the case of Valle de Oro NWR, it is especially important to reach the heads of family/elders hierarchies as they evidently fill the role of 'leader'' within those hierarchies rather than looking to leaders from outside the family hierarchy.

4. Create lasting engagement through participatory design.
A key to creating lasting engagement is taking a visible 'community first' attitude. This does not supersede the 'wildlife first' approach of the agency, but rather elevates the community to a position of significance when it comes to developing an Urban Wildlife Refuge. The 'wildlife first' approach simply becomes a parameter that affects what decisions can be made jointly with the community. The paper suggests 'maintaining the attitude that the refuge works from the community out, not the refuge out,' and to 'always consider how the refuge can be relevant and of service to the community, taking into account their needs and their views on conservation.' This can manifest itself in a variety of ways, including involving the community in decision-making when possible and appropriate rather than simply making decisions and letting them know. The paper also noted the importance of following through after those decisions were made.
Although it is critical for the community to see the USFWS as an asset, the real goal is for the community to consider nature (as defined by the USFWS) an important part of their quality of life. As noted in the report *Nature Doesn't Pay My Bills: Mapping the Gaps between Expert and Public Understandings of Urban Nature and Health* by the Frameworks Institute, *"while experts see nearby nature as necessary to human well- being and thus an essential feature of urban landscapes, the public sees nature as a nice, but not necessary, add-on to urban life."* Nearby nature has to be considered more than 'nice' if the goal of a connected conservation community is to be realized.

Stepping Stones of Engagement
One of the Standards of Excellence is 'Connecting people to nature via stepping stones of engagement.' The implication of a 'progression' is apt in that the ideal outcome is for all members of target audiences to become fully engaged in conserving natural resources, a goal that requires a progressive series of commitments, each a step beyond the other. However, the term is a misnomer in that it implies a linear pathway of steps with a specific starting and ending point, which by inference, involves a visit to the refuge.

In reality, Stepping Stones of Engagement includes an *array* of opportunities that constitute potential starting points to expose target audiences to nature, wildlife, refuges, the USFWS and conservation. By necessity, these 'starting stepping stones' are located in places – physical or digital – that the target audience already, which are unlikely to be on the refuge. Ideally, the first stepping stone should be something that is already a comfortable part of everyday life. Most people have some existing relationship with nature, such as having house plants, or a backyard garden. Those existing relationships should be the starting place for stepping stones of engagement, which requires that *their* nature be considered valid. The discussion won't proceed very far if it begins with an intimation that only the nearby nature that the USFWS wants to conserve constitutes real nature. The approach of starting where the audience is currently located reflects the commitment by the USFWS to meet people where they are, while also reflecting a key principal in this process, which is to minimize the effort required and barriers that have to be surmounted for a person to begin engaging with nature and/or conservation. Each stepping stone provides an experience with nature in some way. As a whole, the 'starting stepping stones' offer potential visitors an array of opportunities to experience nature so everyone has an opportunity to interact with and experience nature in a way that they consider 'safe' and within their

comfort zone. For some it may be a virtual experience on the Internet. For others it might be engaging with Islands of Habitat within their community.

Each stepping stone not only provides an opportunity to experience nature at a specific level, but also seeks to move a visitor along the journey to becoming fully engaged in conserving natural resources. Consequently, all 'starting stepping stones' are linked to a myriad of potential 'follow-up stepping stones,' and from those to other Stepping Stones of Engagement in what the USFWS hopes is an endless journey of engagement and associated commitment to conservation that takes the form of actions. The journey does not require a physical visit to the refuge, although a visit may be one of the most effective tools in achieving the goal of a connected conservation community that supports refuges, the USFWS, and most importantly, engages people in conserving natural and cultural resources.

The keys to an effective array of Stepping Stones of Engagement include the following:
1. Validate whatever relationship the target audience currently has with nature that they consider a part of their quality of life. This could range from a completely natural environment to house plants, a backyard garden, bird feeder, a neighborhood park, and other examples of nature that is managed in some way.
2. Provide easily accessible ''next stepping stones' in locations already frequented by the target audiences, which in this case are within their community, with the ultimate goal of deepening their connection to nature.
3. Ensure that each stepping stone offers high benefit to the target audience for the cost of time, attention and other personal resources as defined by the target market. This is especially important for the starting stepping stones.
4. Ensure that the 'distance' between stepping stones is such that a person can take 'baby steps' of commitment to conservation.
5. Ensure that each stepping stone markets potential next stepping stones.

Native Nature

Everyone has a connection with nature since they breathe air, drink water and eat food, all of which are linked to our natural world. Most people already have a relationship and value this type of nature in some way, but the nature they value may be non-native house plants or non-native vegetation in their yards. To avoid distinguishing 'good' nature from 'bad' nature, which may not work well with the target audience, especially since they come primarily from immigrant communities, the term 'Native Nature' is used to differentiate native flora and fauna from other 'nature.'

Transition Zones on Refuges

The area, typically on the edges of refuges, that contains parking lots, visitor centers and similar infrastructure can be thought of as a Transition Zone within which the visitor moves from a built area catering to people, to a more natural area that focuses on conserving wildlife. The Transition Zone on traditional wildlife refuges is relatively small, with infrastructure limited to parking, visitor centers, trails, boardwalks, restrooms, viewing blinds and other low impact modifications to the environment. These typical Transition Zones are consistent with the current situation in which visitors to refuges come to immerse themselves in the natural world, and want to move into the refuge quickly. In other words, these small Transition Zones are sufficient for traditional users.

On designated Urban Wildlife Refuges, accomplishing the goal of moving non-traditional visitors physically, intellectually and emotionally from an urban area to a natural area may necessitate a series of stepping stones on the refuge that as a whole may require wider Transition Zones. People visit attractions if they believe that the personal benefits are worth the personal costs of the visit, the most significant of which is time. Locating refuges adjacent to urban areas reduces the personal cost by reducing travel time. However, they don't address the perceived lack of personal benefit that deters many potential visitors from taking the time to visit a refuge. One way to address that issue is to provide experiences and activities within the Transition Zone that are already valued by the local community, but not typically associated with a wildlife refuge. Examples include picnicking with a large extended family unit, celebrating a family milestone such as a birthday, and meeting friends to socialize. Such activities create the opportunity for the USFWS to expose people to the wonders of nature, have nature become a part of what they consider quality of life even if just a backdrop for social activities, and inspire them to care for nature in their communities and beyond. They also provide the opportunity to motivate visitors to move further along the Stepping Stones of Engagement.

To maximize the quantity and quality of habitat while also achieving the goal of putting non-traditional urban visitors adjacent to a natural setting, the Transition Zone should be concentrated in a band along the interface between refuge lands and the community, creating a space where the boundaries blur and necessary Stepping Stones of Engagement can be developed that will continue the journey – literally, intellectually and emotionally – of the visitor from an urban setting to a natural setting. In most cases, these Transition Zones will all be on refuge property because lack of control over surrounding land. In a sense, Islands of Habitat function the same as Transition Zones – to help move people intellectually physically from a focus on a built environment to a focus on a natural environment.

One way to think about Urban Wildlife Refuges is that they extend into a community in such ways as planting Islands of Habitat in schoolyards through partnerships with public schools, and helping people plant native plants in their yards to develop native habitat to attract local birds and wildlife. It may also include partnerships with entities that have different agendas, such as human health or community service, to create projects that are mutually beneficial, which in this case are ones where people experience nature beyond what they already value in their lifestyles. Such projects may inspire those partners and communities to engage in other activities that support conservation of natural resources. In turn, the community extends into the refuge by using it for activities they already participate in within their community that are compatible with the refuge's goal of restoring populations of native wildlife and plants. The goal is for the refuge to become a part of the community and the community to become a part of the refuge. The refuge can facilitate this connection by making all visitors feel welcome, creating environments with nature where they feel comfortable, and by offering non-traditional opportunities for the community to use the refuge. One way to make visitors feel more comfortable and welcome is by including and integrating cultural facets of target audiences such as language, stories, and traditions, in tours, signage, programs, facilities, etc.

In short, attracting non-traditional urban audiences may require offering non-traditional experiences and opportunities, such as a Community Garden or the opportunity to get coffee, which may be in conflict with existing parameters regarding what can and can't happen on a traditional refuge but should be assessed/considered. Those parameters may need to be modified to provide urban refuges a wider array of options for attracting and engaging such audiences. However, care must be taken to separate

the Transition Zone in an urban refuge from the refuge proper to avoid creating the expectation that activities that occur within those areas can occur in the refuge proper.

The Information Network Approach

In today's world people have a very limited amount of time and virtually unlimited options for spending it, which makes time a highly valued currency. Interpretive opportunities are commodities, with the cost measured primarily in time and attention, which includes opportunity cost. To compete successfully for a visitor's attention requires offering information that the target audience considers to be worthwhile benefit for the cost involved. That is why the number of people reading interpretive panels increases with the use of visuals (higher promise of benefit at lower cost), limited text (reduces perception of and actual 'cost' in terms of time and effort), and application of a myriad of other factors that contribute to the perception of a good benefit to cost ratio.

In general, people prefer to commit small increments of time when making choices on engaging and staying engaged in interpretive opportunities (if I like the heading I will read the text; if I like this sign I will read the next one; if I like this exhibit I will look at the next one; and so on). A commitment at the beginning of an interpretive experience to stay engaged throughout, such as to read *all* the signs or view *all* the exhibits, is rare. We have all experienced this when reading books. We choose them based on an expectation that we will find a particular benefit we seek (entertainment, mental stimulation, etc.) at a particular 'cost' related to time and difficulty. If the book does not provide the desired benefit, or it is too hard to read (higher cost) we often quit.

Applying the incremental approach to interpretation results in a series of opportunities arranged in a network, beginning with ones that are highly visible, attract attention and do not require a significant amount of time and effort, and then moving to opportunities that provide more detail on different aspects of the story. A book is a good example of an information network approach. The story that the author wants people to engage in is contained in the chapters, but to motivate people to start reading the book designers use a cover to attract attention so people see and pick up the book, a back cover to entice them to open the book, excerpts and other information on flyleaves to motivate them to start reading chapter one, and so on. Books are designed this way because it matches the process people use to choose and use information.

This is the approach being used to develop the Interpretive Network for Valle de Oro NWR. For visitors, highly visible, low effort and interesting strategies, such as interpretive panels, in or adjacent to areas already frequented by visitors (so additional cost in time to access the panel is minimized) will attract attention and quickly introduce people to key concepts, hopefully piquing their interest so they are more amenable to spending time with other opportunities that provide more detail. Successive levels of information providing more detail and requiring more time and effort, such as the exhibits and interpretive trails, will build off the panels.