Going for the Gold:

Using the ISI Envision™ Tool to Design the Ridgewood View Park Reservoir and Pump Station

Nicholas Augustus, P.E. – Engineering Associate

Cheryl Welch – Strategic Planner

Tualatin Valley Water District

Tualatin Valley Water District

Presentation Outline

1. Sustainability at TVWD
2. Provide an overview of the Envision process
3. Provide description of how Envision was applied to the Ridgewood View project
4. Provide lessons learned on Ridgewood View

TVWD Basics

- Second largest water district in Oregon
- 45 square mile service area
- Serve roughly 213,000 people thru 60,000 connections
- 93% residential (70% of our water)
- 7% commercial/industrial (30% of our water)
- 125 employees
- 19 Ave. MGD

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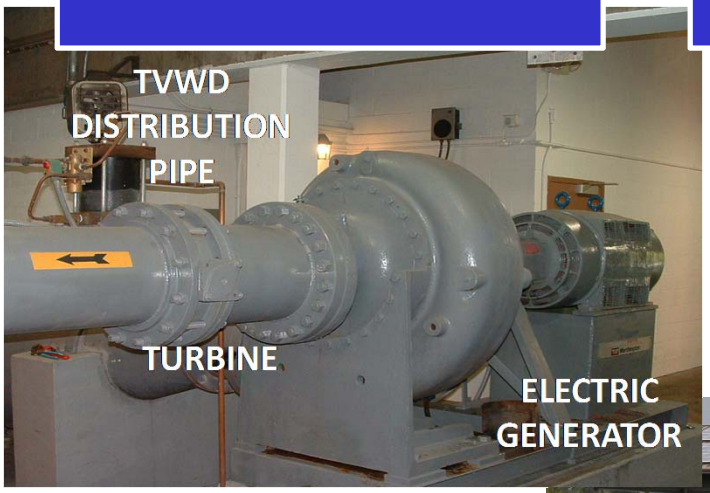
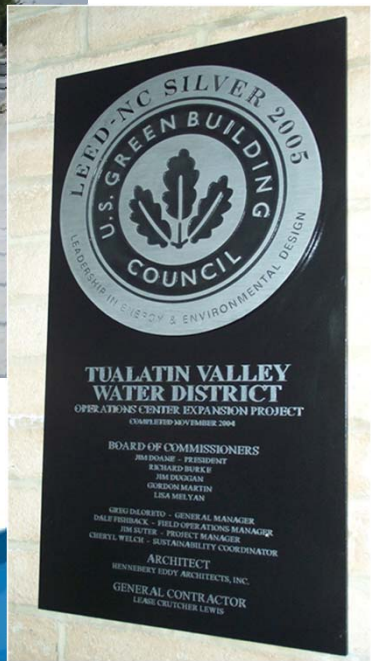
Utility-wide Sustainability

Hydroelectric generation for decades – upgraded in 2007, further improved in 2012

Solar generation at headquarters since 2009 - Provides ~20% of headquarters electricity usage

Purchase Renewable Energy Credits and Carbon Offsets to offset Greenhouse Gas (GHG) emissions from all facilities





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Infrastructure Sustainability Rating Systems

Living Building Challenge

- International Living Future Institute
- Very rigorous design and construction standards
- TVWD has not attempted to build to these standards

LEED

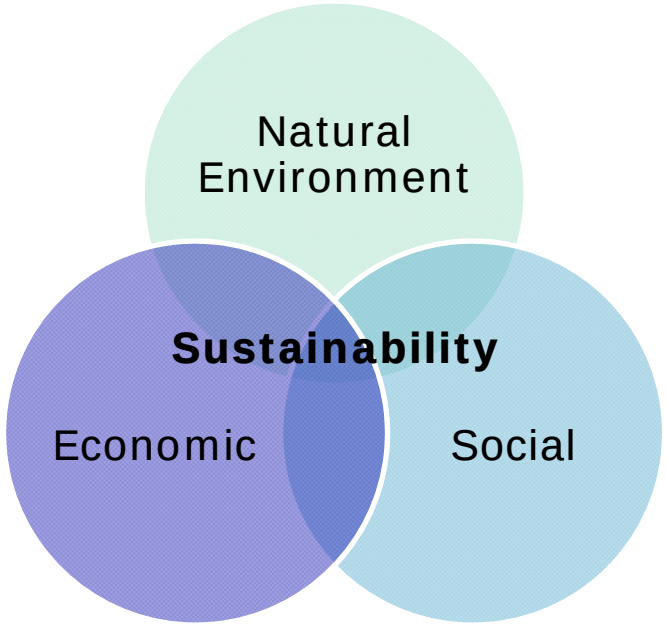
- US Green Building Council rating system
- Headquarters building Silver LEED certified in 2005
- Best for occupied buildings

Envision™

- Developed by APWA, ACEC, ASCE & Zofnass Program for Sustainable Infrastructure at Harvard
- AWWA now a partner
- Designed for public infrastructure

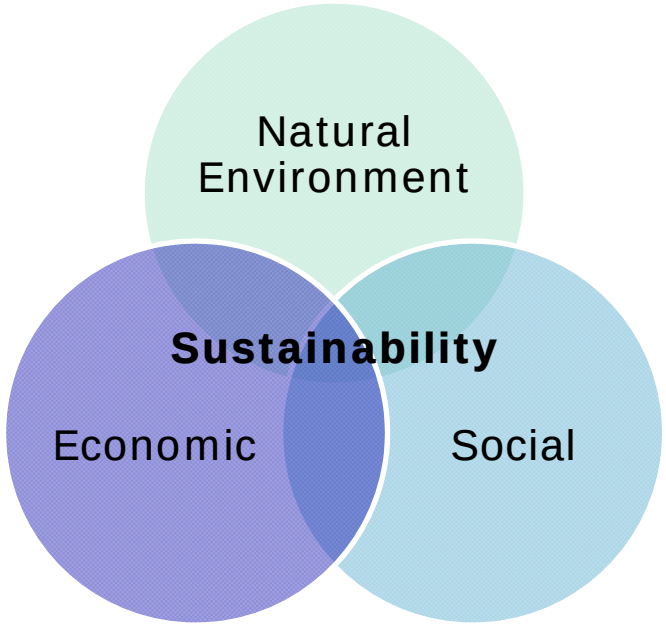
Sustainability in Engineering

- Goals in Engineering at TVWD
- Design guidelines - triple bottom line
- Envision™ process used for infrastructure projects
  - Helps with decision making
  - Provides guidance on sustainability issues
- Formal credits and certification not applicable for all projects



Envision™ Usage

- Advantages:
  - 3rd-party verification
  - Public acceptance
  - Enhance design
  - Documentation of design process
  - Helps to incorporate O&M concerns



Steps in Envision™ Process

Project Registration	• Initial application and setup – recommend submitting early. • Allows for verifier to be assigned. • Helps guide project documentation
Assessment	• Done by Project Team
Verification	• ISI review of submittal
Authentication	• Authenticator review for consistency in applying points on national level
Recognition	• Based on points achieved

Envision™ Categories

- Five categories – several credits within each category
- 60 credits total

Envision™ Application

- Institute for Sustainable Infrastructure website (http://sustainableinfrastructure.org/)
- Overview of points

Credit Category	Applicable Points	Earned Points	Innovation Points	Total Points Pursued	Percentage of Applicable Points
QUALITY OF LIFE	136	79	0	79	58%
LEADERSHIP	121	85	0	85	70%
RESOURCE ALLOCATION	182	65	0	65	36%
NATURAL WORLD	188	75	0	75	40%
CLIMATE AND RISK	122	69	0	69	57%
Total Project Points	749	373	0	373	50%

Envision™ Application

Self Assessment

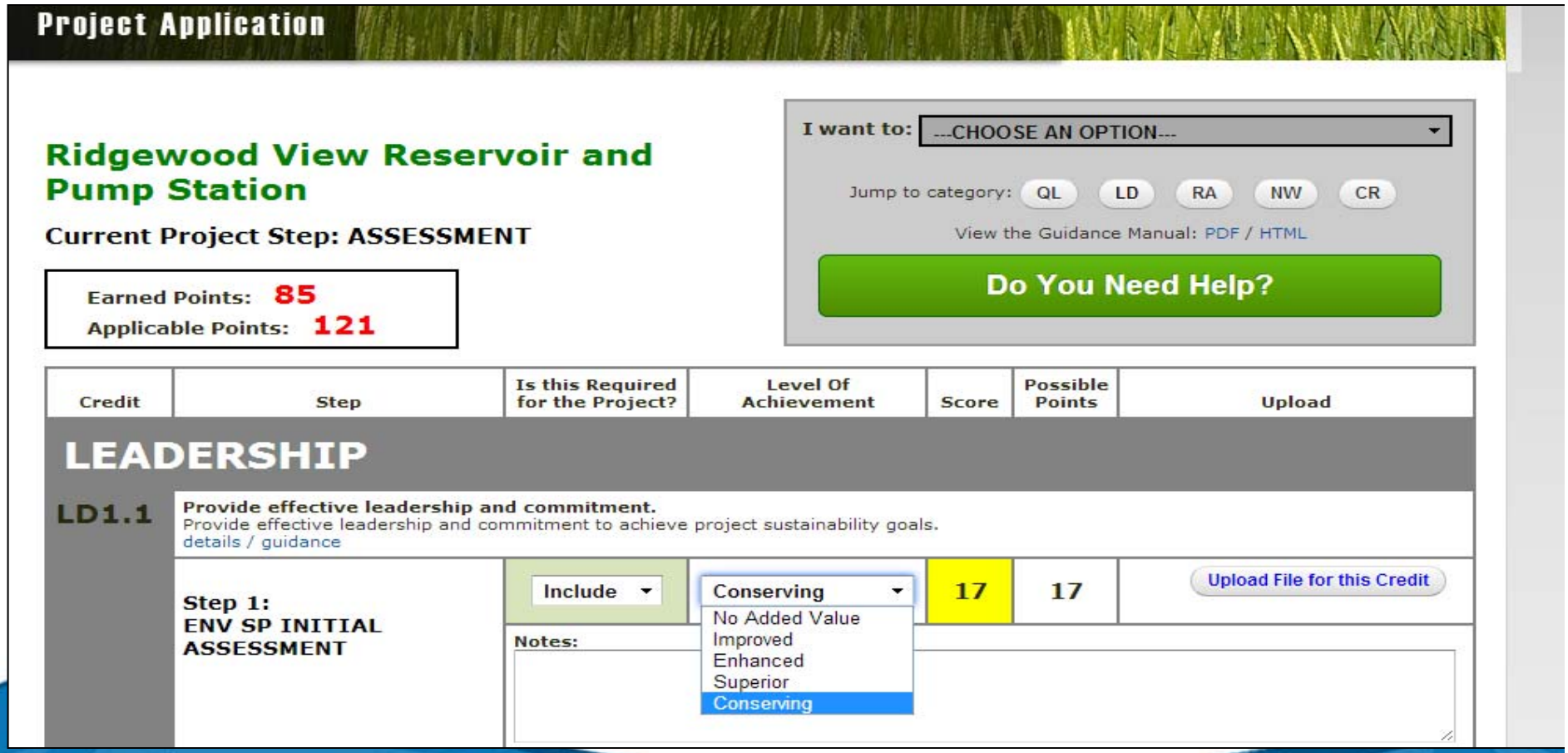
Include / Exclude

Range of Points

- No added value
- Improved
- Enhanced
- Superior
- Conserving
- Restorative

Envision™ Application

Project Setup: Decide what level the project can attain for each credit



Guidance Manual

Describes the credit in several different ways, specifies evaluation criteria, and provides resources

LD1.3 FOSTER COLLABORATION AND TEAMWORK

INTENT:
Eliminate conflicting design elements, and optimize system by using integrated design and delivery methodologies and collaborative processes.

METRIC:
The extent of collaboration within the project team and the degree to which project delivery processes incorporate whole systems design and delivery approaches.

LEVELS OF ACHIEVEMENT

IMPROVED	ENHANCED	SUPERIOR	CONSERVING	RESTORATIVE
(1) Random acts of sustainability. No particular process or methodologies to incorporate sustainability into the design. Sustainability features are added on an opportunistic basis. The owner and the project team have expressed a desire to improve sustainable performance, but the approach taken is not systematic. So-called green features are added to the project in a haphazard fashion. (A, B)	**(4) Taking a systems view.** The project team approaches the project as a system or set of systems interconnected with other systems. The owner and the project team recognize the importance of addressing infrastructure projects in the context of the entire community or city infrastructure. That systems view is seen as important for optimizing the overall performance of the community/city infrastructure. (A, B)	**(8) Sustainable design as a team sport.** The project owner and the project team recognize the importance of working together as a team to achieve high levels of sustainable performance. Team chartering sessions are to be conducted with the owner and the multi-disciplinary project team. Project management processes are collaborative. Design charrettes are to be held and involve a broad set of stakeholders. The project owner is willing to share risk and rewards with the project team, recognizing that achieving higher levels of performance involves the incorporation of new and relatively untried technologies. (A, B)	**(15) Whole systems design and delivery.** Whole systems design processes, procedures and methodologies are incorporated into the overall project delivery process. The multi-disciplinary project team works together to find ways to improve sustainable performance, commensurate with the owner's goals and objectives, technical feasibility, costs, and appetite for risk. The project team uses whole systems design processes, procedures and methodologies. Design considerations include reducing sources of demand, using recycled and/or renewable resource supplies, using excess resources generated within the system, eliminating design conflicts, eliminating duplicate functions or unnecessary redundancies. Risk/reward sharing is part of the owner's contract with the design team. (A, B)	

DESCRIPTION

The purpose of this credit is to provide incentives for and recognition of owner and project team collaboration in the delivery of the constructed works. In conventionally delivered projects, project team members tend to work as independent entities, focusing on delivering their portion of the project mostly in isolation from other members. Integrated project delivery brings project team members together early in the planning and design stages to understand how their design assumptions and decisions affect the work of others, positively or negatively. This includes members of the project team who are traditionally involved later in the project, e.g., constructor, commissioning agent. Working separately, performance is sub-optimal, confined to individual project components. Working together as an integrated team, performance can be optimized across the entire project.

At the advanced levels of achievement, the project team explores ways to improve performance and reduce costs employing whole system design methodologies. Design considerations include reducing sources of demand, using recycled and/or renewable resource supplies, using excess resources generated within the system, eliminating design conflicts, eliminating duplicate functions or unnecessary redundancies.

Design charrettes are employed in the development of the design, to foster an environment for project innovation. The design team works together to identify opportunities to improve sustainable performance. Commissioning functions are brought in early in the design process to make sure that project components and systems will function as intended.

ADVANCING TO HIGHER ACHIEVEMENT LEVELS

Benchmark. Teamwork is not a dominant component in project delivery processes. The team member's primary objective is meeting project requirements and client expectations, and avoiding claims and litigation. Project is delivered by different task groups mostly working independently.

Performance improvement. Shift from a task view to a systems view of project design and delivery. Increasing recognition of the importance of working together as a collaborative team, including the project owner. Incorporation of true and effective risk/reward sharing between the project owner and the project team.

EVALUATION CRITERIA AND DOCUMENTATION

A. To what extent has the project team incorporated the principles of collaboration, teamwork and whole systems design in the execution of the project?
   1. *Documentation of the multi-disciplinary project teams business processes and management controls, in the form of procedures, flowcharts, checklists and other documented control measures.*
   2. *Evidence of the planned use of design charrettes to identify opportunities for improving sustainable performance and reducing design conflicts.*
   3. *Evidence of the planned use of whole systems design processes to optimize project performance.*

B. To what extent has meaningful risk and reward sharing been made part of the contract between the project owner and the project team?
   1. *Existence of risk and reward sharing terms in project contract documents*

SOURCES

- W. A. Wallace, *Project Sustainability Management Guidelines*, Unpublished manuscript, September 2010

RELATED CREDITS

LD1.2 Establish a sustainability management system

Tualatin Valley Water District

Ridgewood View & Envision™

TVWD is currently completing the Envision™ Assessment

- Documentation
- Tracking

Certification Levels (Percent of total applicable points)

- 20% - Bronze
- 30% - Silver
- 40% - Gold
- 50% - Platinum

Ridgewood View Park Reservoir and Pump Station:

- Existing Conditions
  - Constructed ~1970
  - Existing Park

Ridgewood View Park Reservoir and Pump Station

- Existing Conditions

Ridgewood View Park Reservoir and Pump Station:

- Site Plan

Tualatin Valley Water District

Roles and Scope

TVWD	Consultant	Institute for Sustainable Infrastructure (ISI)
• TVWD managed, provided insight and guidance, provided some documentation, etc. (identify which categories we had the most input)	• AECOM has certified Envision™ Sustainability Professional (required for submittal) • Additional team members to help document and research	• Verifier - Confirms levels of achievement and documentation • Authenticator - Provides oversight and validates decisions made by verifier

Ridgewood View & Envision™

Obtaining certification	Reviewed each credit with team, including Envision™ professional
	Determined # of points to be reasonably achieved for each credit
	Determined number of hours and financial cost of achievement
	Made final decision regarding points to be pursued
	Assigned responsibilities
	Continuously discussed credits during design
	Incorporated sustainability into plans and specifications

Envision™ Categories

Ridgewood View & Envision™

Quality of Life addresses a project's impact on surrounding communities - physical, economic, and/or social - during and after construction

- Improve community Quality of Life
- Minimize noise and vibration
- Minimize light pollution
- Improve accessibility
- Preserve local character – park design
- Enhance public space

Ridgewood View & Envision™

Leadership rewards communication, collaboration and inclusion of a wide variety of people in creating the project. It takes a long-term holistic view of the project and its life cycle

- Provide effective leadership and commitment
- Establish a sustainability management system
- Foster collaboration and teamwork
- Provide for stakeholder involvement
- Improve infrastructure integration
- Plan for long term monitoring and maintenance
- Extend useful life

Ridgewood View & Envision™

Resource Allocation is concerned with the quantity, source and characteristics of resources used – primarily materials, energy and water

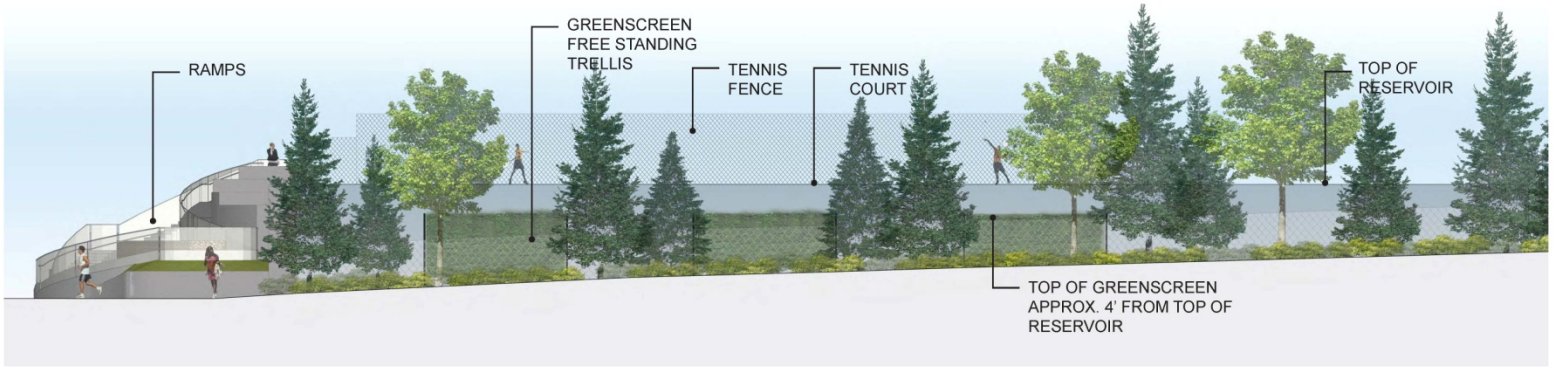
- Use recycled materials
- Use regional materials
- Reduce excavated materials taken off-site
- Use renewable energy
- Commission and monitor energy systems
- Reduce potable water consumption

Ridgewood View & Envision™

Natural World involves minimizing negative impacts and developing ways the project can interact with natural systems in a positive way

- Preserve prime habitat
- Protect wetlands and surface water
- Avoid adverse geology
- Manage stormwater
- Restore disturbed soils
- Maintain wetland and surface water functions

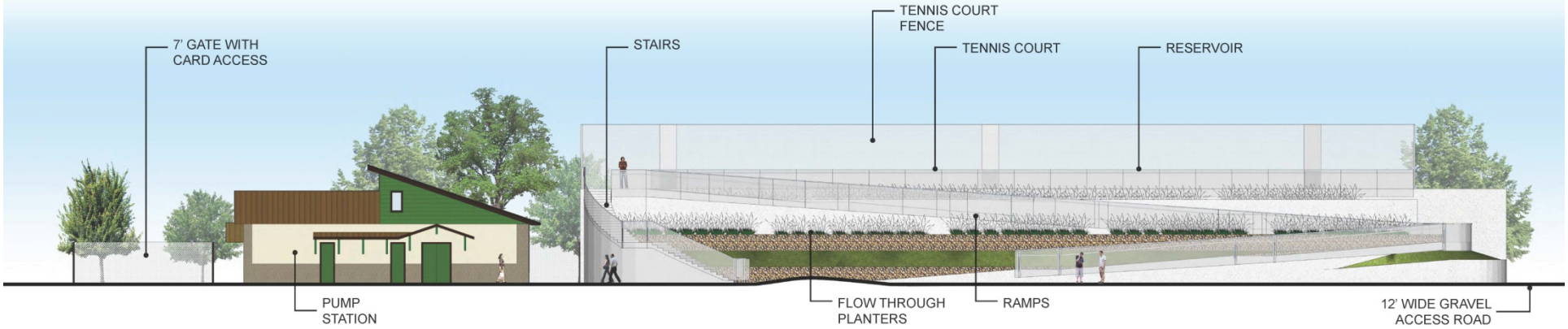
east elevation



elevation

green screen precedents

south elevation



section 1


PLAY AREA WITH SAFETY SURFACING
5' PATH
OPEN LAWN
EXISTING OAK GROVE
TENNIS COURTS WITH FENCING
GABION RETAINING WALL
TERRACED RAINGARDENS
15' WIDE SERVICE ROAD
ELEV.= 417.60
ELEV.= 420.50
ELEV.= 421.5
ELEV.= 420.67
ELEV.= 424.00
ELEV.= 431.00
ELEV.= 438.50
ELEV.= 441.00
NEW WATER RESERVOIR
6' WIDE ADA RAMP

Ridgewood View & Envision™

Climate and Risk encourages minimization of emissions and resilience of the project to reduce risk

- Assess climate threat
- Avoid traps and vulnerabilities
- Prepare for long-term adaptability
- Prepare for short-term hazards
- Manage heat island effects

Cost of Envision Certification

Fees:

$1,000 application fee

Envision™ certification based on project size

Sample nonmember costs:

Up to $2M: ***$3,000*** (~0.12% of project cost)

$5M - $25M: ***$17,000*** (0.07% to 0.34%)

$100M - $250M: ***$33,000*** (0.01% to 0.03%)

How Envision™ Changed Us

What did we do differently because of Envision™?

- Specifications
  - Local hiring
  - Material reuse
  - Local material sources
  - 3rd party verification
  - 3rd party commissioning
- Avoided traps
- Improved accessibility

Lessons Learned

Decide early in planning phase whether to use Envision™

Some projects are not appropriate for Envision™

- Pipeline only projects, for example, will garner some points (minimizing noise and vibration, disruption, hours of operation, providing notice to residents, etc.) but maybe not enough to achieve certification

Keep Stakeholders involved

Decide up front on a way to organize documentation

Methodically determine who will do what by when

Include Envision in management decision meetings

Lessons Learned

Utilize Envision™ as a marketing tool for projects which might need some good PR

- Provides formal documentation that the environment and community are being taken into consideration throughout the project

Identify what Envision™ practices you may be able to use with other infrastructure projects, whether or not you work toward formal certification

Develop communication and documentation protocols within the team early to ensure documents do not have to be re-created

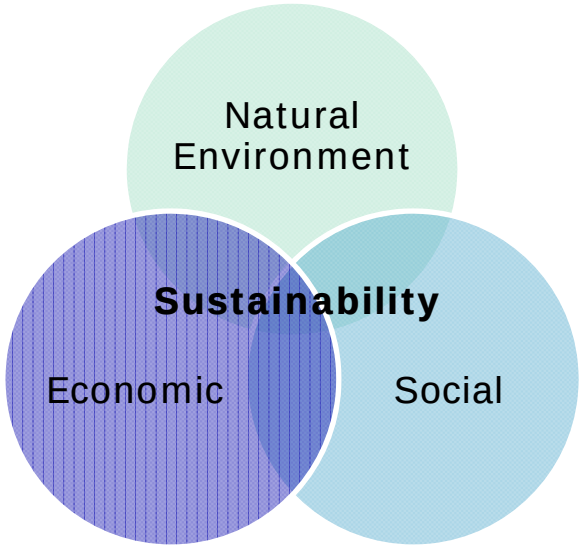
Always be thinking how will the design affect the overall goals of the project

Ridgewood View – Going for the Gold!

Questions?

Comments?

Your experience?



Nicholas Augustus, P.E. – Engineering Associate
nick@tvwd.org

Cheryl Welch – Strategic Planner
cheryl@tvwd.org