Envision ™ : A Holistic Framework for Evaluating and Rating Water Infrastructure

By: Meghana Kamath

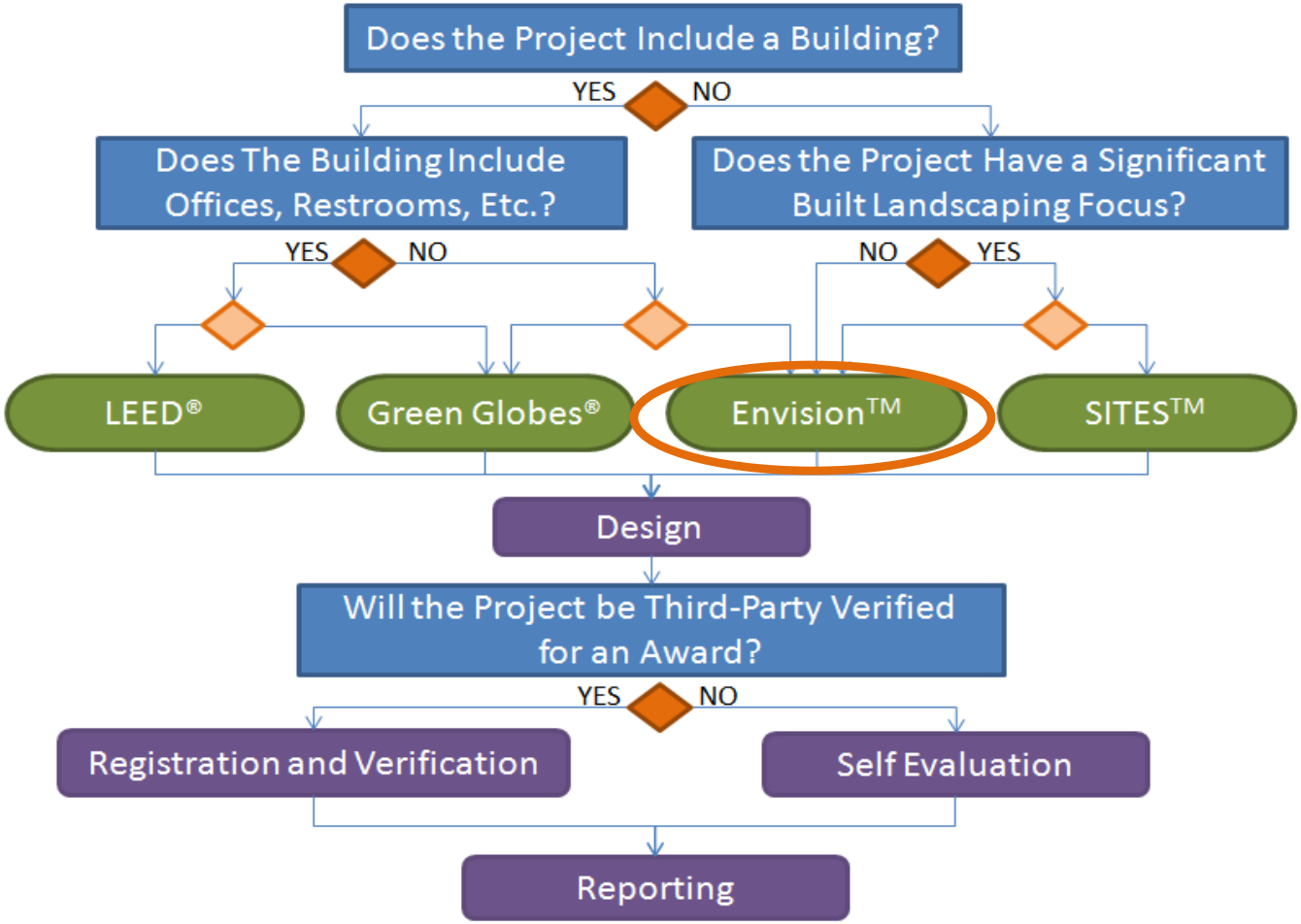
michigan water environment association
michigan's water quality people

Infrastructure Project Funding Seminar
2016

GREELEY AND HANSEN

What is Envision™?

Sustainable Design Tools



Does a Project Truly Contribute to Sustainability?

- Performance contribution
  - Sought out all reasonable opportunities
  - Raised the bar
  - Achieved what was reasonable
- Pathway contribution
  - Considers how the project aligns with community needs
  - Enhances quality of life

Use of recycled concrete and asphalt in highway construction

Highway traffic congestion

Envision™ Categories

QUALITY OF LIFE	Purpose, Community, Well being
LEADERSHIP	Collaboration, Management, Planning
RESOURCE ALLOCATION	Materials, Energy, Water
NATURAL WORLD	Siting, Land & Water, Biodiversity
CLIMATE AND RISK	Emission, Resilience

Envision™ Water Credits

Credit Category and Number	Credit Title
Resource Allocation 3.1	Protect Fresh Water Availability
Resource Allocation 3.2	Reduce Potable Water Consumption
Resource Allocation 3.3	Monitor Water Systems
Natural World 2.1	Manage Stormwater
Natural World 2.3	Prevent Surface and Groundwater Contamination

Project Design using Envision™

Integrate and Go Greener

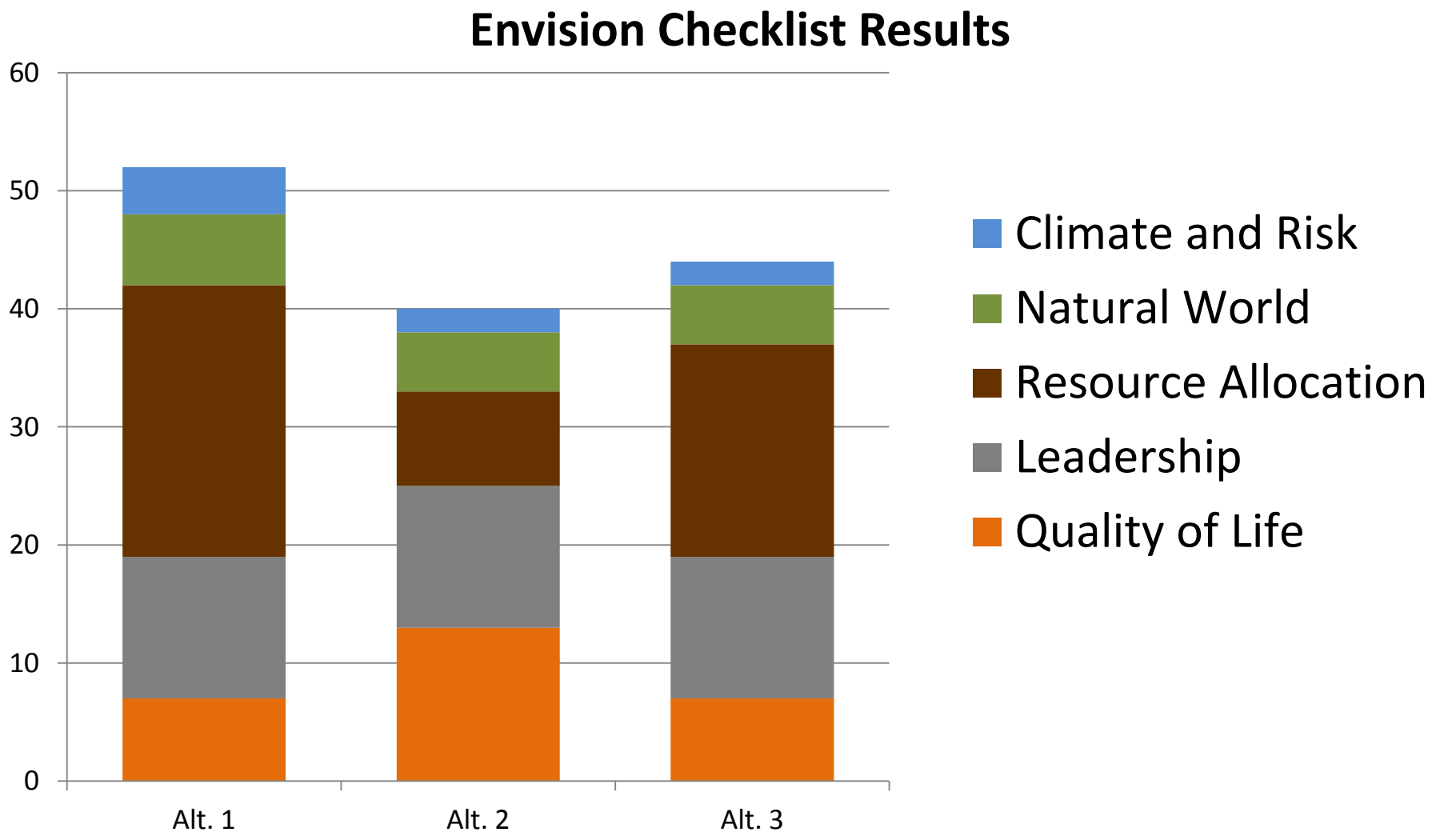
Envision Tools

1. Checklist
2. Rating System
3. Verification and Award

Applications in

- Planning
- Design
- Public Relations
- Policy

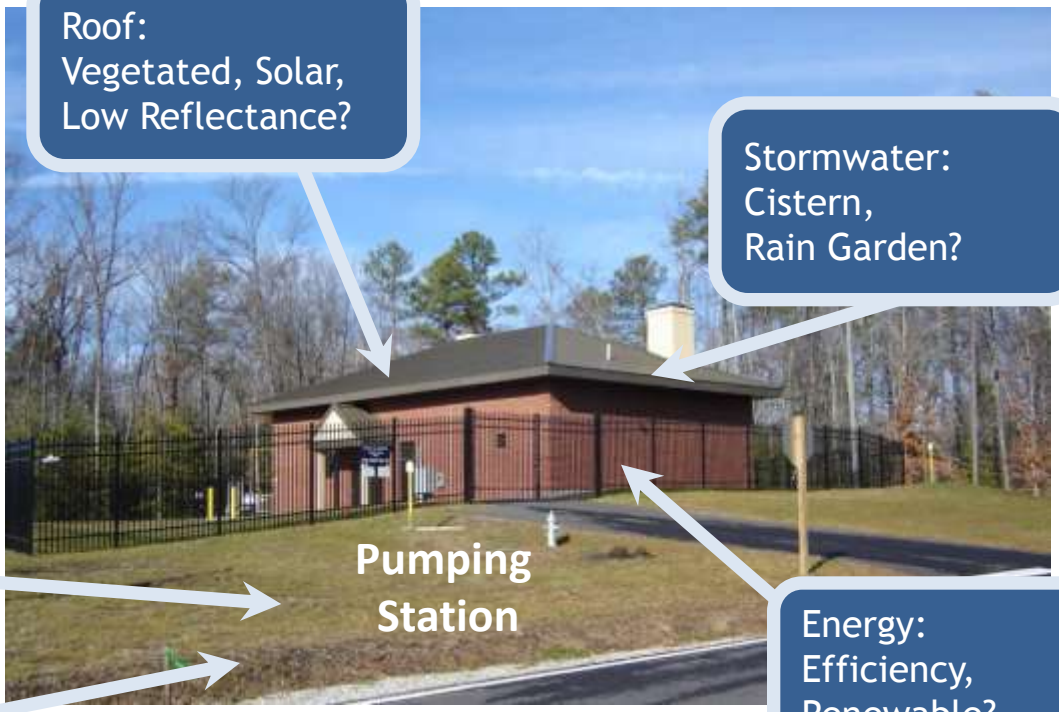
Envision™: Comparing Alternatives



Envision™: Improving Designs

Inherent to Project:
- Noise and Odor Control
- Stakeholder Involvement
- Infrastructure Renewal
- Capacity Enhancement
- Flexible Operations
- Resiliency

Opportunities:



Envision™ is for All Infrastructure

ENERGY

Geothermal
Hydroelectric
Nuclear
Coal
Natural Gas
Oil/Refinery
Wind
Solar
Biomass

WATER

Potable water distribution
Capture/Storage
Water Reuse
Storm Water Management
Flood Control

WASTE

Solid waste
Recycling
Hazardous Waste
Collection & Transfer

TRANSPORT

Airports
Roads
Highways
Bikes
Pedestrians
Railways
Public Transit
Ports
Waterways

LANDSCAPE

Public Realm
Parks
Ecosystem Services

INFORMATION

Telecommunications
Internet
Phones
Satellites
Data Centers
Sensors

Examples of Application Areas for Envision Credits

Project Goals

- Reliable Wet Weather Performance
- Improved Flow Distribution and Solids Handling
- Durability and Energy Efficiency
- Identify Risks
- Reuse Materials
- Energy Efficient and Environmentally Preferable Materials
- Landscaping
- Stakeholder Involvement

1. Pump Upgrades and Sizing

- Three MSPs: 22 MGD Each
  - High efficiency Induction motors
  - Motor Control Panel
- Eight PSPs: 650 GPM Each
- Two SWPs: 18 GPM

Credits

- RA 2.1 - Reduce Energy Consumption
- RA 3.3 - Monitor Water Systems
- LD 3.1 - Plan for Long-Term Monitoring & Maintenance

2. Turbo Type Process Air Blowers

- Sized to Meet Current Process Air Demand – 54,000 scfm
- Quieter
- 18% More Efficient than Existing Blowers
- Provision for Future

Credits

- RA 2.1 - Reduce Energy Consumption
- QL 2.2 – Minimize Noise and Vibration
- LD 2.2 - Improve Infrastructure Integration

3. Material Diverted From Landfill

PST Tanks 1-4

- Approximately 5,470 CY of Material
- Identified Volume of Materials Diverted from Landfill

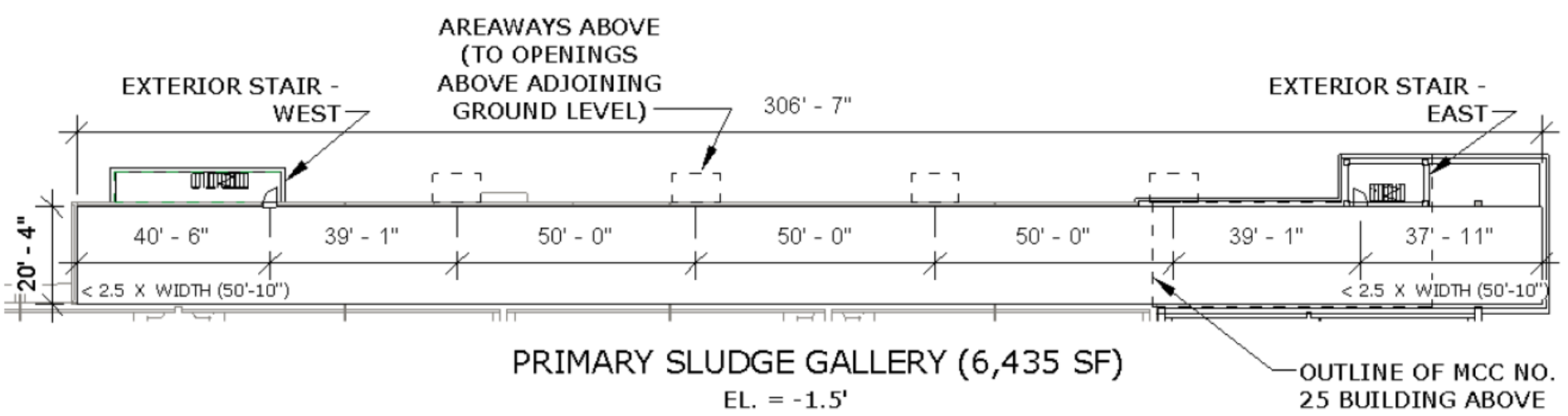
Ammonia Building

- Approximately 23 Tons of Steel
- Deconstruction List
- Identify Materials to be Recycled
- Identify Volume of Materials Diverted from Landfill

Credits

- RA 1.5 - Divert Waste from Landfills
- RA 1.7 - Provide for Deconstruction and Recycling

4. Primary Sludge Gallery and Stairway



- Increased Day Lighting
- Energy Efficient “Exterior Stairs”
- LED Lighting

Credits

- RA 2.1 – Reduce Energy Consumption
- RA 2.2 – Use Renewable Energy

5. Materials

- High Recycled Content
  - Aluminum
  - Steel
  - Concrete
- High SRI Roofing
- Preferred Purchasing
- Locally Sourced

Credits

- RA 1.2 – Support Sustainable Procurement Practices
- RA 1.3 – Use Recycled Material
- RA 1.4 – Use Regional Materials

6. Roofs (Approx 10,000 SF)

- Pilot test
- Green Roof Potential
- Reduce Run-Off to Sewers by 50-90%

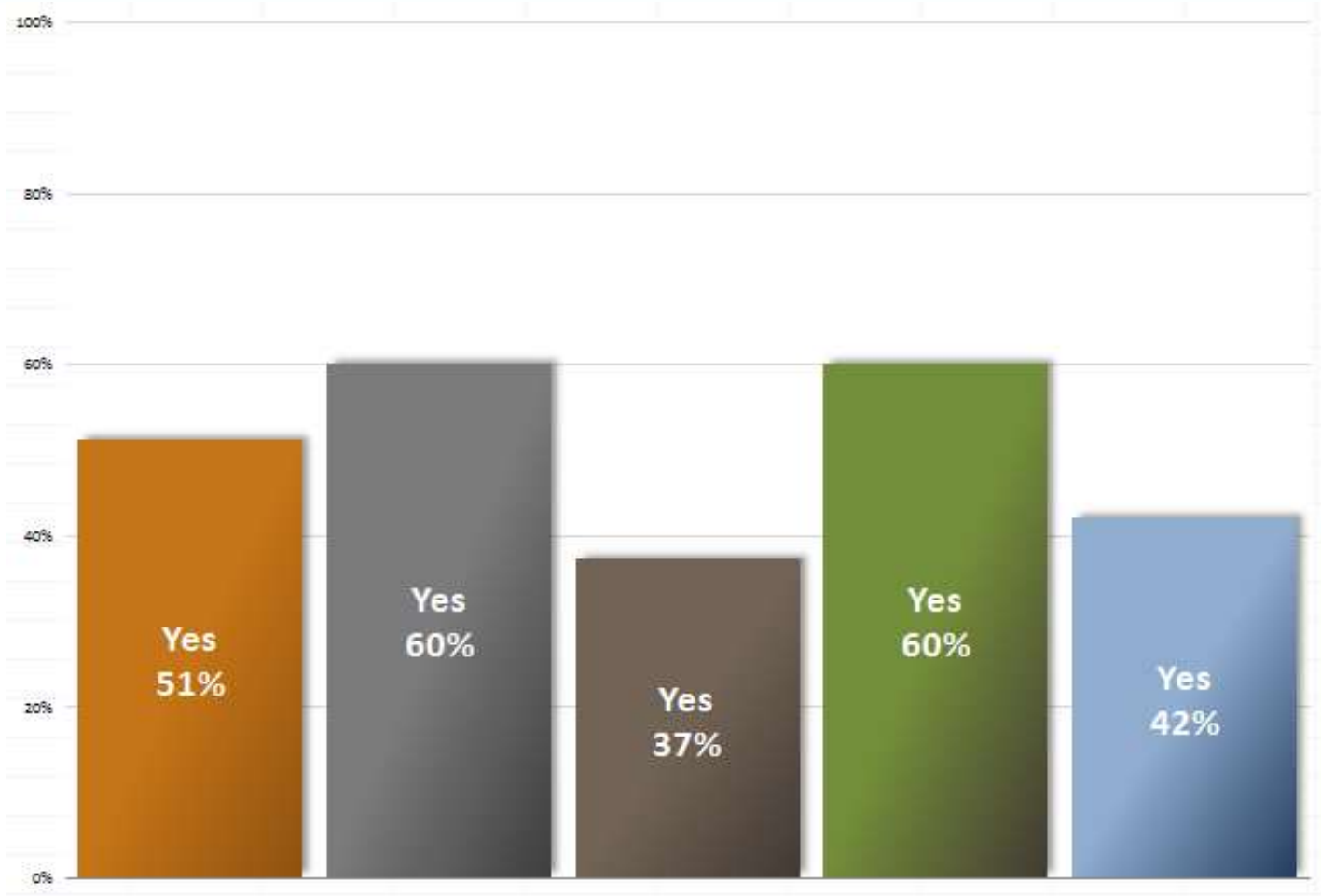
Credits

- NW 2.1 – Manage Storm Water
- QL 1.1 – Improve community quality of life

24-hr NRCS Type II Storm with 2.18 Inches of Precipitation

Hydrologic Simulation Results						
Roof Runoff Rate (cfs)	Stormwater Model Used	Time of Peak (min)	Runoff Volume (cf)	Runoff Volume (gal)	Runoff Volume (inches)	Rainfall Retained (in)
0.43	SBUH	710	1,629	12,187	1.95	0.23
0.06	WBM/PULS	740	354	2,647	0.42	1.76

Envision™ Checklist Score



Envision™: Public Relations

Envision™: Shaping Policy

Current Use

- Policies
- Proclamations
- Design Standards
- RFPs
- RFQs

Global Members and Implementation

Members

ENV SPs

Implementation

Adapted from: Nelson, Denise. AWWA Journal, January 2

Why Use Envision™?

- Quantify sustainable practices with standardized, nationally-recognized metrics
- Incorporate sustainable philosophies into discreet infrastructure projects
- Quantify soft benefits of sustainable infrastructure
- Compare “impact” of mutually exclusive sustainability options (green roof vs. solar panels)

GH's Envision™ Expertise

- ISI Charter Member
- ISI Committee Members
  - Writing ISI's training program
- 10+ ENV SPs
- Verification Contract
  - Performed Verification for First Project
- Papers & Presentations
- Blog

THANK YOU

Infrastructure Project Funding Seminar 2016

GREELEY AND HANSEN