

Wastewater Management Plan Status Report - May 2016



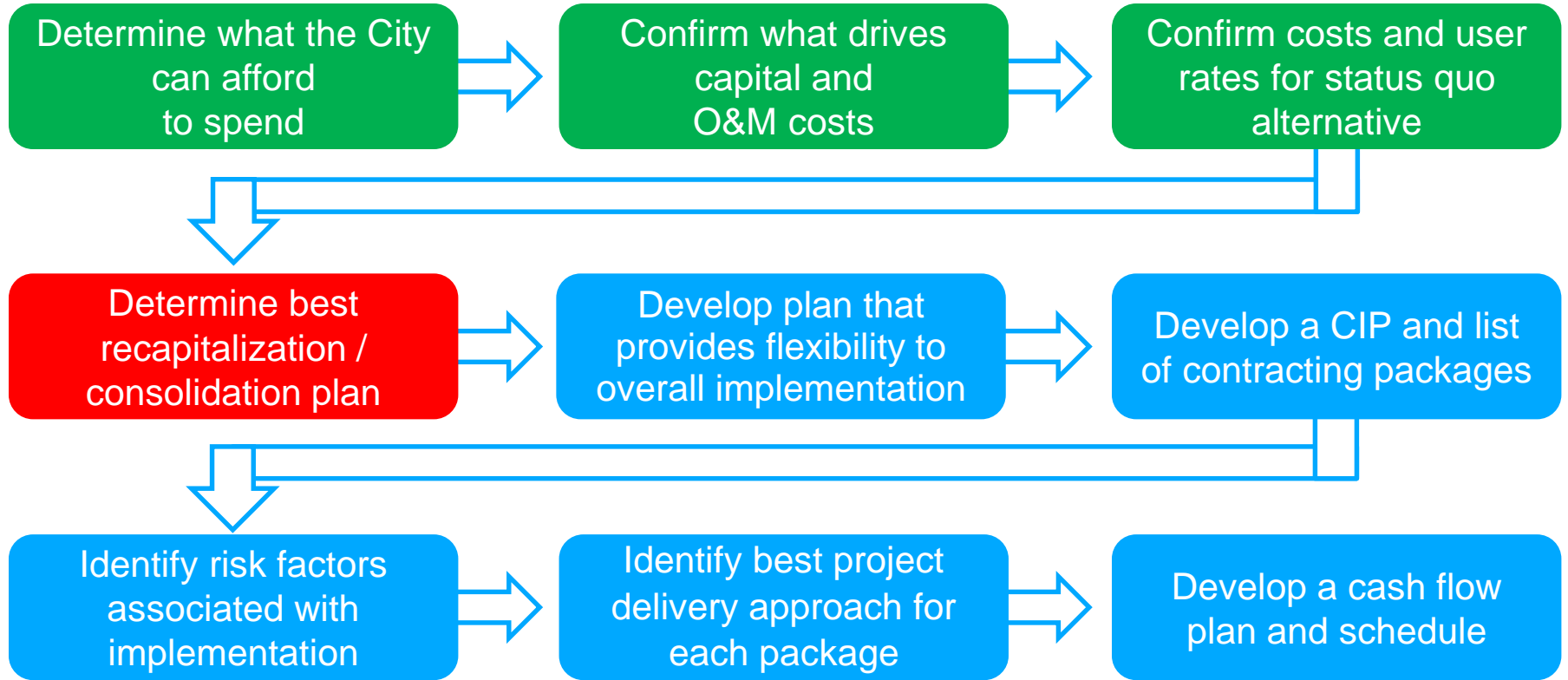
Mark Van Vleck



Objectives

- Update Council on work to date on WWTP Management Plan
- Provide overview of material for Open House #2
- Identify work still to do and timing for next steps
- Address Questions

Wastewater Management Plan Approach





Assessment Results to Date

- All 6 Treatment Plants Require Work
- Capital Cost for Treatment Plant Repair and Rehab is estimated at approx. \$220M
- Staffing Levels at the Plants are within benchmark ranges
- Energy and Chemical Costs are well above benchmark levels
- Oso and Greenwood require expansion to meet future flows
- Treatment for 60 MGD capacity is required for next 30 years including Planned Development to south of Oso Creek



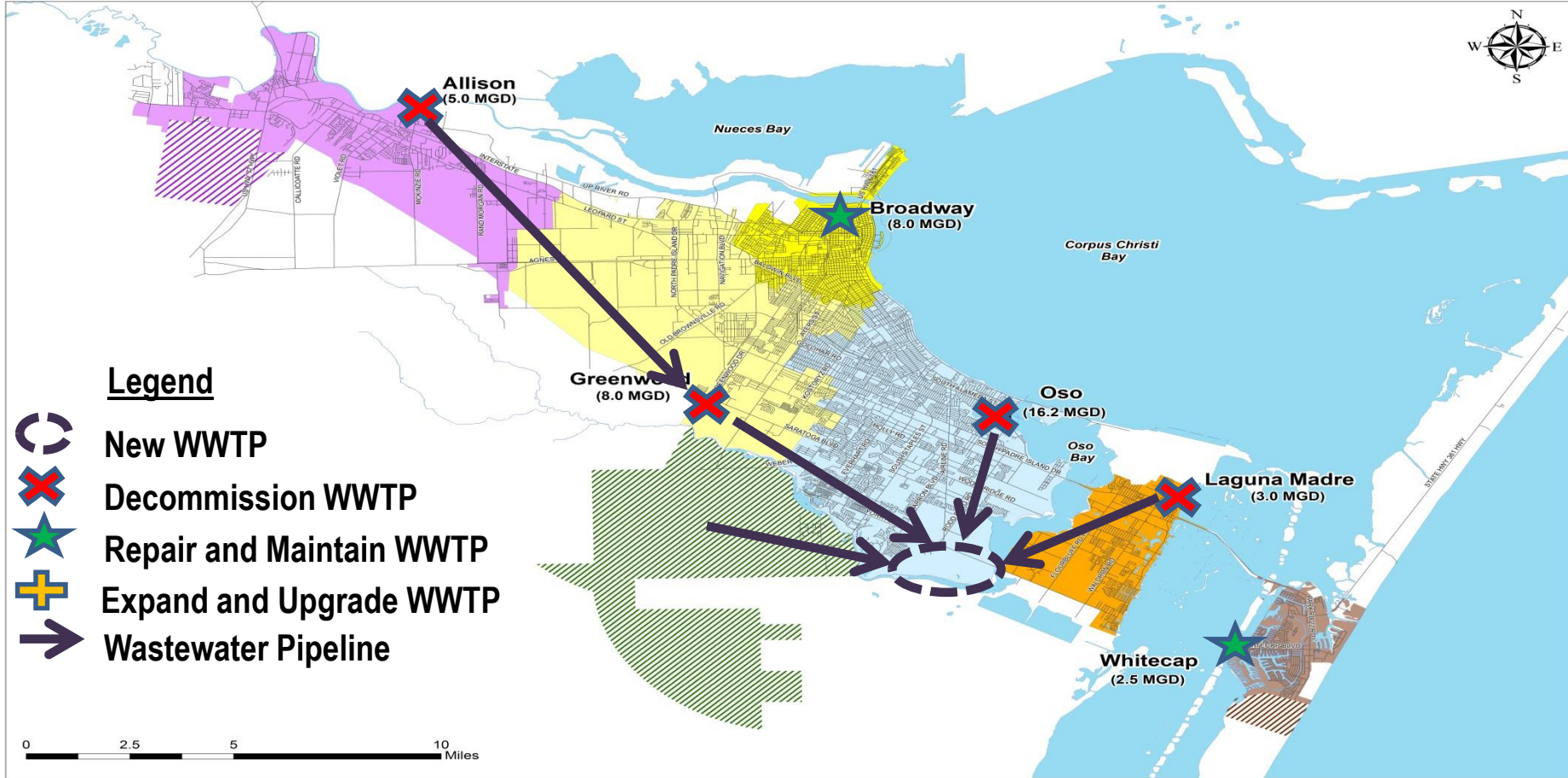
Option Development

- Options were developed to meet these priorities:
 1. Meeting regulatory compliance
 2. Minimize wastewater user rates
 3. Reduce long term O&M and capital costs
 4. Provide drought resistant water to industry
 5. Meet needs for planned development
- All Options will:
 - Consolidate 4 plants (Oso, Allison, Greenwood, Laguna Madre)
 - Keep New Broadway and Whitecap in operation

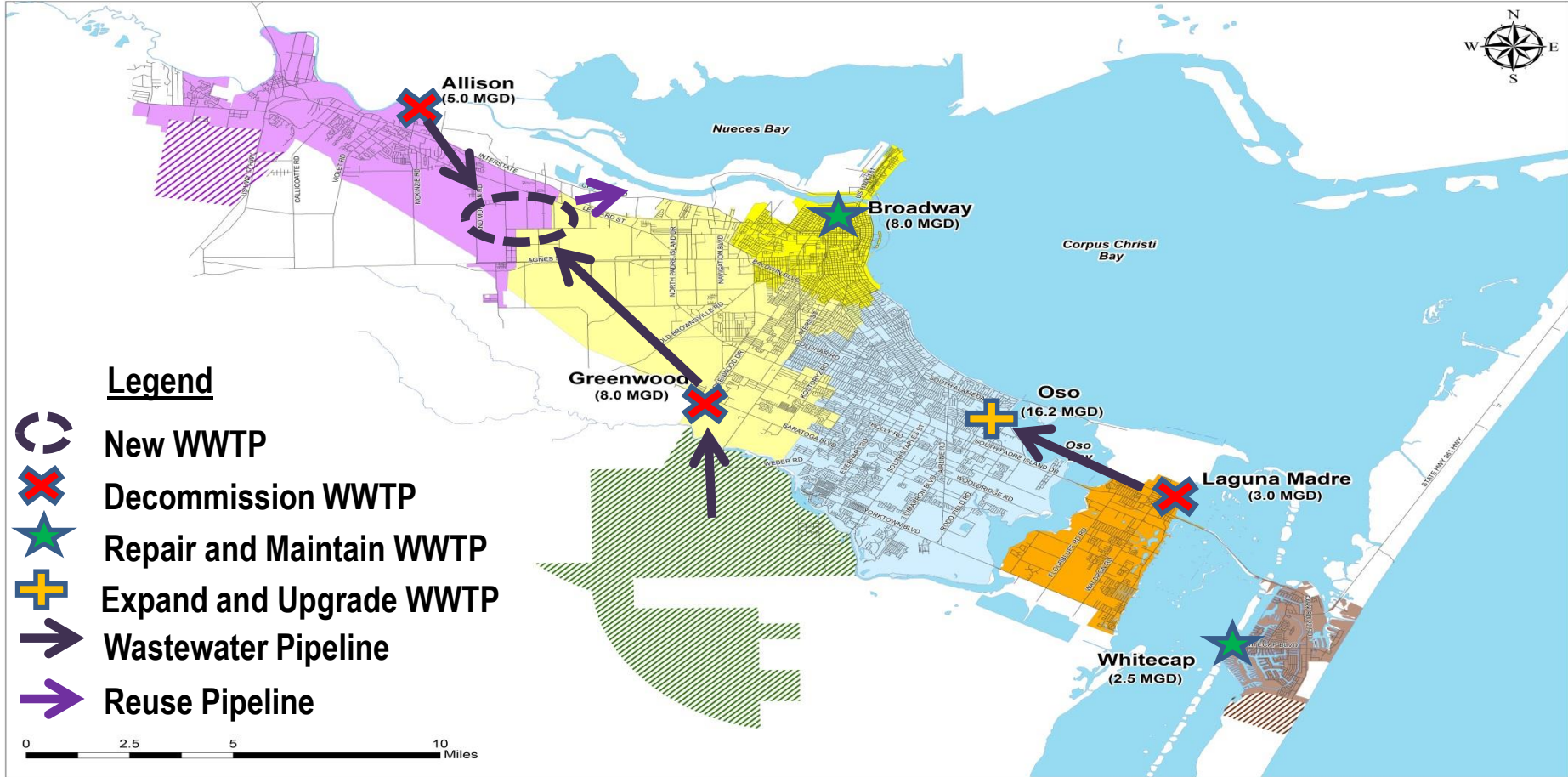
Options Under Consideration

| Category | Description | Sub-options |
|---|---|---|
| 1 - Status Quo | Keep all six plants. Continue with current operations and planned maintenance. | <ul style="list-style-type: none">• Not applicable |
| 2 - Consolidate at Existing Plant sites | Keep Broadway & Whitecap. Consolidate remainder at <u>two</u> of the existing plant sites. | <ul style="list-style-type: none">• Allison + Laguna Madre• Allison + Oso |
| 3 - Consolidate at New Plant site | Keep Broadway & Whitecap. Consolidate remainder at <u>one</u> new plant site. | <ul style="list-style-type: none">• North site• Southwest site• Southeast site |
| 4- Combination of New and Existing | Keep Broadway & Whitecap. Consolidate remainder at <u>two</u> sites with at least one new site plus an existing site. | <ul style="list-style-type: none">• North + Laguna Madre• Southwest + Laguna Madre• North + Southeast• North + Oso |

Sample of a One Site Option (3C: Southeast)



Sample of a Two Site Option (4D: North & Oso)





Questions?



Backup Slides Options Being Considered

Station 3: Options Being Considered

Options were developed to meet these priorities:

1. Meeting regulatory compliance
2. Minimize wastewater user rates
3. Reduce long term Operating and Maintenance (O&M) and capital costs
4. Provide drought resistant water to industry
5. Meet needs for planned development

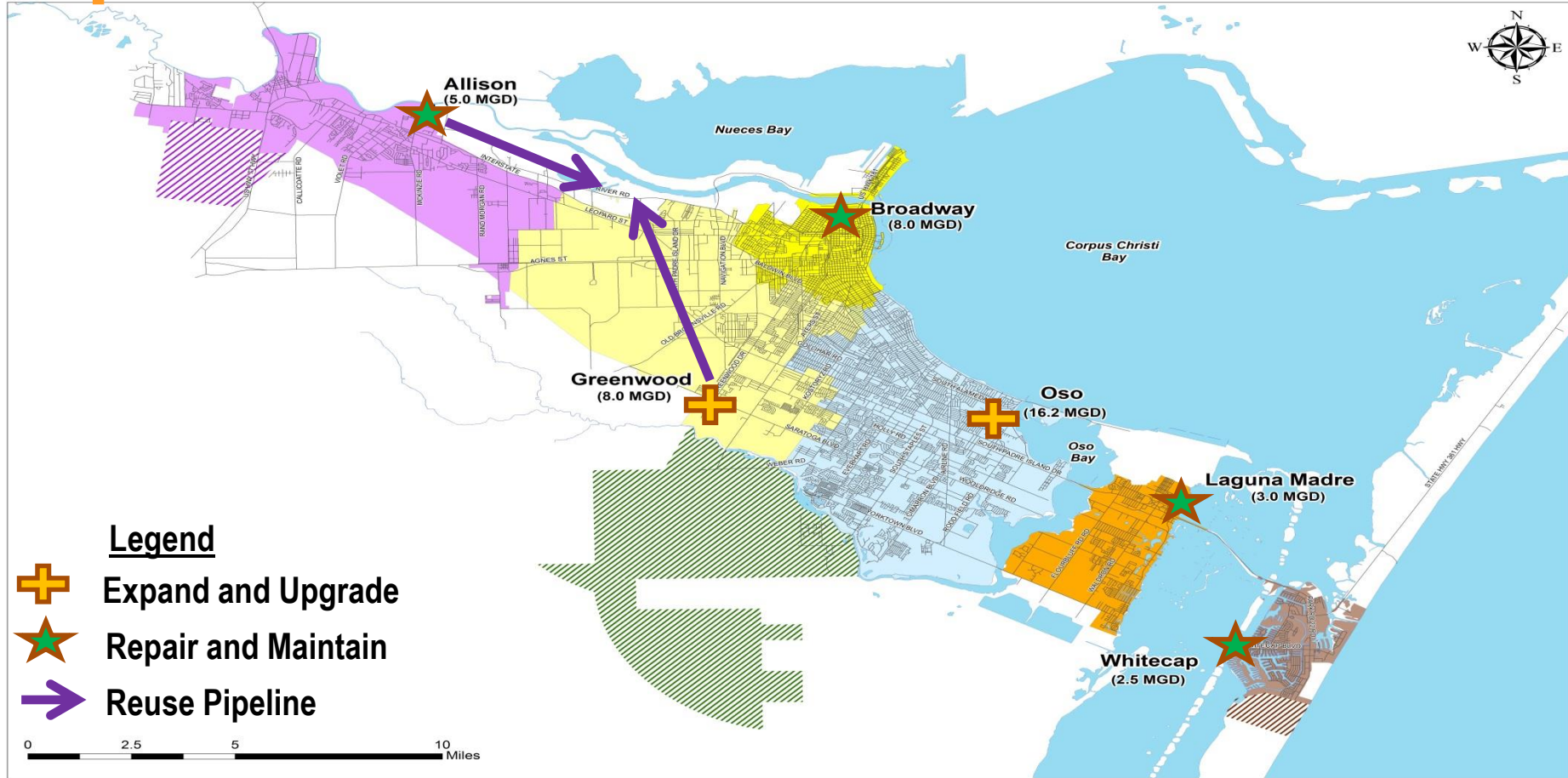
Wastewater Servicing Options

| Category | Description | Sub-options |
|---|---|---|
| 1 - Status Quo | Keep all six plants. Continue with current operations and planned maintenance. | <ul style="list-style-type: none">• Not applicable |
| 2 - Consolidate at Existing Plant sites | Keep Broadway & Whitecap. Consolidate remainder at <u>two</u> of the existing plant sites. | <ul style="list-style-type: none">• Allison + Laguna Madre• Allison + Oso |
| 3 - Consolidate at New Plant site | Keep Broadway & Whitecap. Consolidate remainder at <u>one</u> new plant site. | <ul style="list-style-type: none">• North site• Southwest site• Southeast site |
| 4- Combination of New and Existing | Keep Broadway & Whitecap. Consolidate remainder at <u>two</u> sites with at least one new site plus an existing site. | <ul style="list-style-type: none">• North + Laguna Madre• Southwest + Laguna Madre• North + Southeast• North + Oso |

Project Goal

The goal of the project is to report on the current state of the system, plan for future wastewater needs, and optimize costs and user rates.

Option 1: Status Quo



Option 1: Status Quo

DESCRIPTION

Collection System Rehabilitation

Repair and Rehabilitation of existing 6 treatments plants

Upgrade Oso, Allison and Greenwood to Advanced Treatment

Expand Capacity at Oso (8 MGD) and Greenwood (2 MGD)

Provide Reuse Water from Greenwood and Allison to Industry

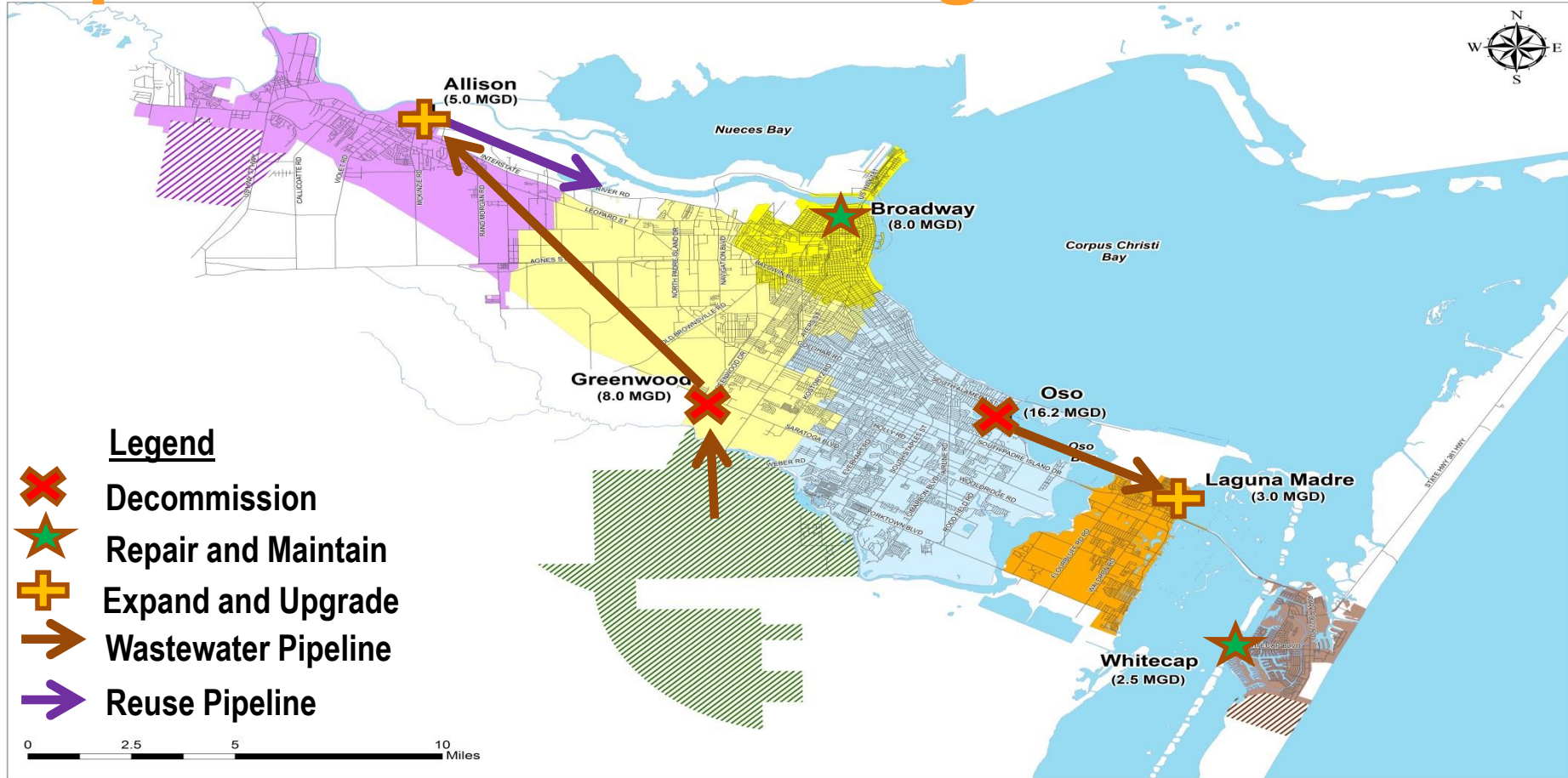
Provide Capacity for Planned Development

Capital cost for 30 Year plan estimated as \$900M to \$1,050M

Evaluation of Option 1: Status Quo

| ADVANTAGES | DISADVANTAGES |
|--|--|
| <ul style="list-style-type: none">Minimal impact on collection system | <ul style="list-style-type: none">Continue inefficiencies of operating multiple plant sites |
| <ul style="list-style-type: none">Maintains base flows in existing receiving waters | <ul style="list-style-type: none">Need a new plant for servicing of development south of Oso Creek |
| <ul style="list-style-type: none">Allows immediate start on necessary rehabilitation | <ul style="list-style-type: none">Requires upgrades at Oso while operating near full capacity |
| <ul style="list-style-type: none">Lowest overall Capital cost | <ul style="list-style-type: none">Continues with site flooding issues at Greenwood |
| | <ul style="list-style-type: none">Expansion at Oso may not be possible due to prior agreements |
| | |

Option 2A: Allison & Laguna Madre



Option 2A: Allison & Laguna Madre

DESCRIPTION

Collection System Rehabilitation

Expand and Upgrade Allison (35 MGD) and Laguna Madre (25 MGD)

Decommission Oso and pump flow to Laguna Madre

Decommission Greenwood and pump flow to Allison

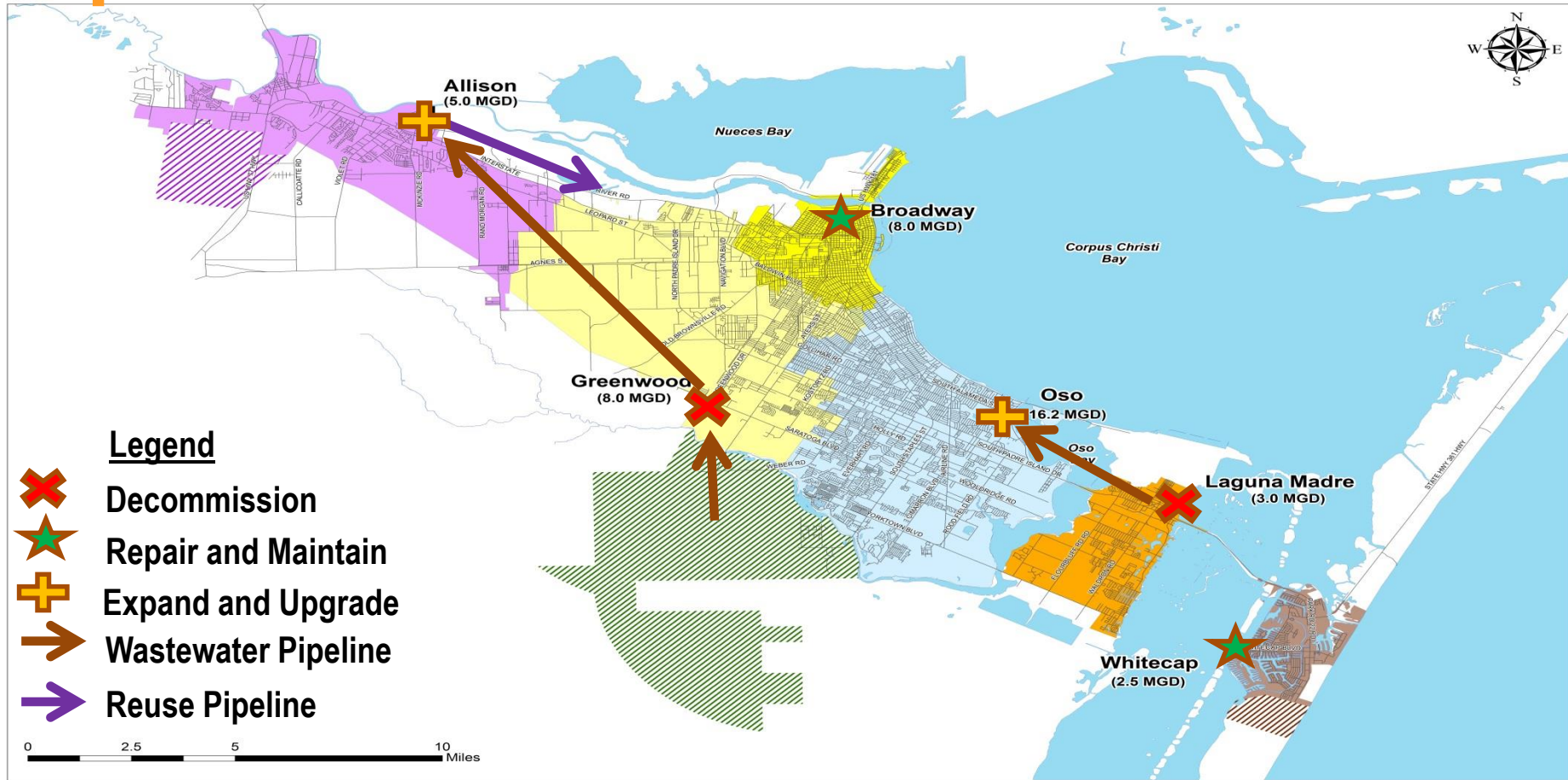
Repair and Rehabilitation of Broadway and Whitecap

Provide Reuse Water from Allison to Industry

Provide Capacity for Planned Development

Capital cost for 30 Year plan estimated as \$1,050M to \$1,300M

Option 2B: Allison & Oso



Option 2B: Allison & Oso

DESCRIPTION

Collection System Rehabilitation

Expand and Upgrade Allison (35 MGD) and Oso (25 MGD)

Decommission Laguna Madre and pump flow to Oso

Decommission Greenwood and pump flow to Allison

Repair and Rehabilitation of Broadway and Whitecap

Provide Reuse Water from Allison to Industry

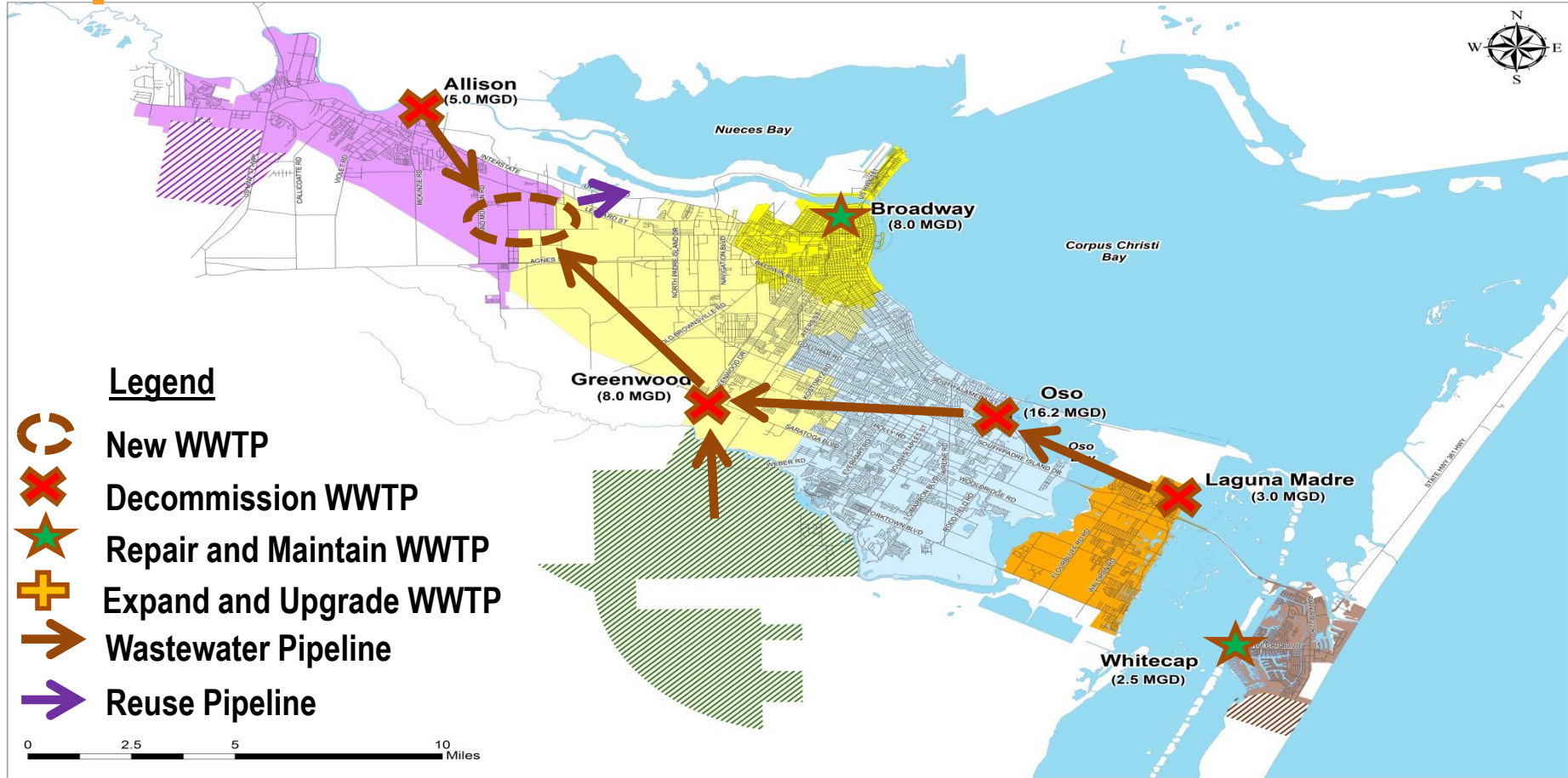
Provide Capacity for Planned Development

Capital cost for 30 Year plan estimated as \$1,000M to \$1,250M

Evaluation of Category 2 Options (Consolidate to two existing sites)

| | Advantages | Disadvantages |
|----|---|---|
| 2A | <ul style="list-style-type: none">• Consolidates over 85% of the City flow in two plants• No land required for new plant with potential new neighbor issues• Close to industry for reuse• Allows immediate start on rehabilitation and repairs | <ul style="list-style-type: none">• Continue inefficiencies of operating multiple plant sites• More stringent future effluent requirements at Allison |
| 2B | <ul style="list-style-type: none">• Consolidates over 85% of the City flow in two plants• No land required for new plant with potential new neighbor issues• Close to industry for reuse• Allows immediate start on rehabilitation and repairs• Maintain base flow into Oso Bay | <ul style="list-style-type: none">• Continue inefficiencies of operating multiple plant sites• Requires upgrades at Oso while operating near full capacity• More stringent future effluent requirements at Allison and Oso• Expansion at Oso may not be possible due to prior agreements |

Option 3A: North Site



Option 3A: North Site

DESCRIPTION

Collection System Rehabilitation

Construct New Plant (60 MGD) generally between I 37 and CC Airport

Decommission Allison and pump flow to New Plant

Decommission Laguna Madre and Oso, pump flow to Greenwood

Decommission Greenwood and pump flow to New Plant

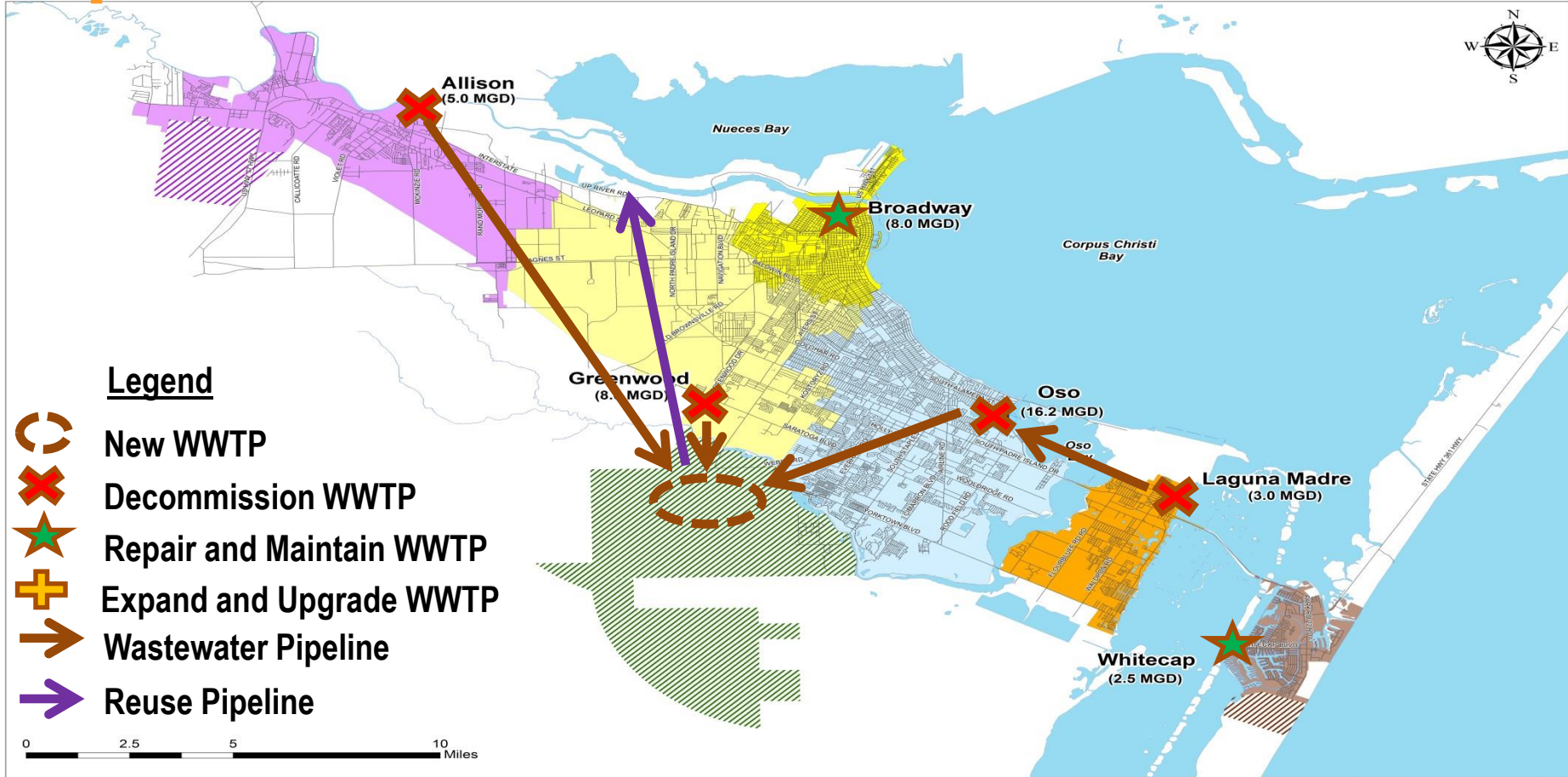
Repair and Rehabilitation of Broadway and Whitecap

Provide Reuse Water from New Plant to Industry

Provide Capacity for Planned Development

Capital cost for 30 Year plan estimated as \$1,100M to \$1,350M

Option 3B: Southwest Site



Option 3B: Southwest Site

DESCRIPTION

Collection System Rehabilitation

Construct New Plant (60 MGD) south of Oso Creek near Crosstown Exp.

Decommission Allison and pump flow to New Plant

Decommission Laguna Madre and Oso, pump flow to New Plant

Decommission Greenwood and pump flow to New Plant

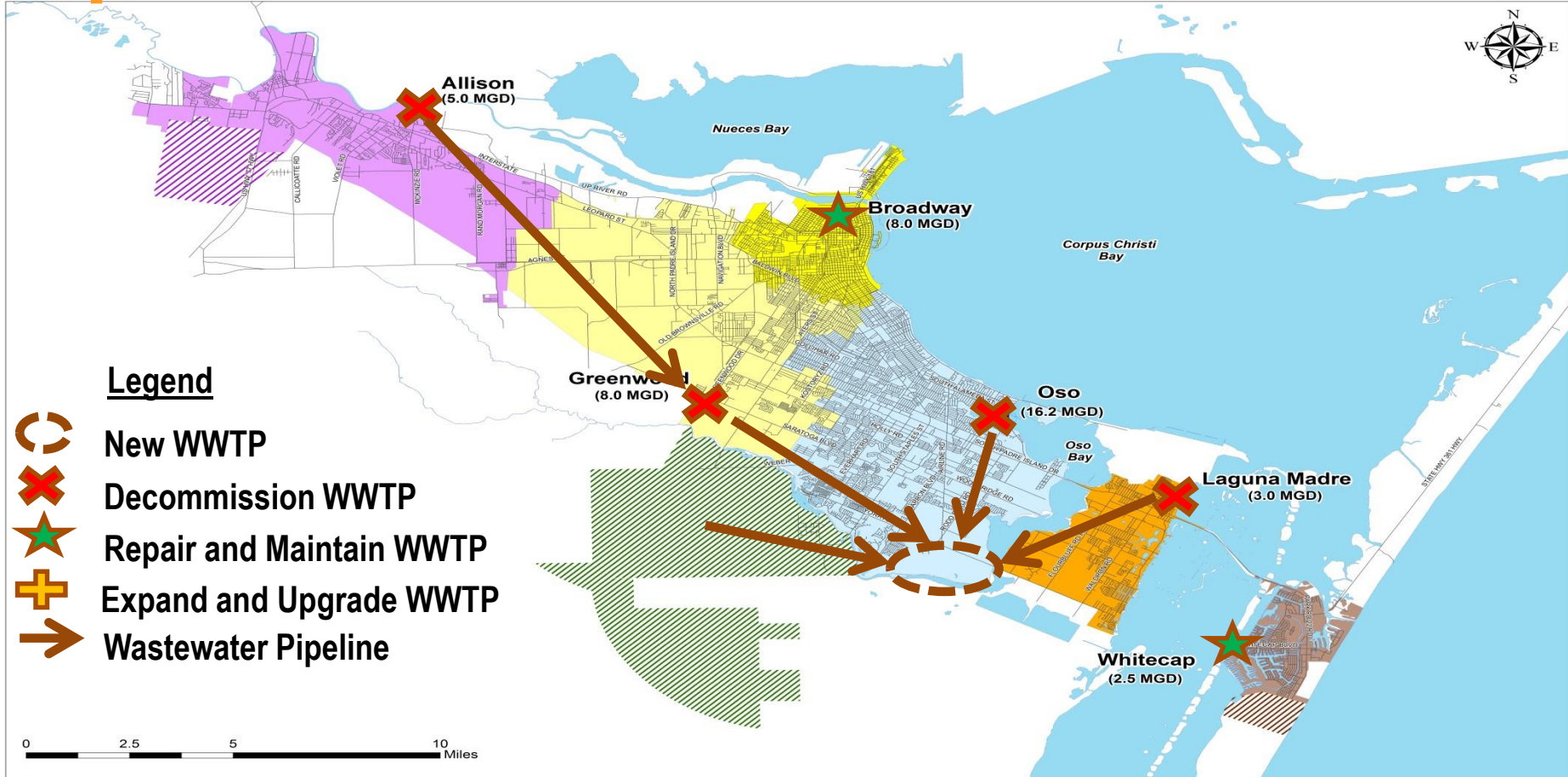
Repair and Rehabilitation of Broadway and Whitecap

Provide Reuse Water from New Plant to Industry

Provide Capacity for Planned Development

Capital cost for 30 Year plan estimated as \$1,150M to \$1,400M

Option 3C: Southeast Site



Option 3C: Southeast Site

DESCRIPTION

Collection System Rehabilitation

Construct New Plant (60 MGD) south of Yorktown Rd near Oso Bay

Decommission Allison and pump flow to Greenwood

Decommission Laguna Madre and Oso, pump flow to New Plant

Decommission Greenwood and pump flow to New Plant

Repair and Rehabilitation of Broadway and Whitecap

No Reuse Water proposed to Industry (not cost effective)

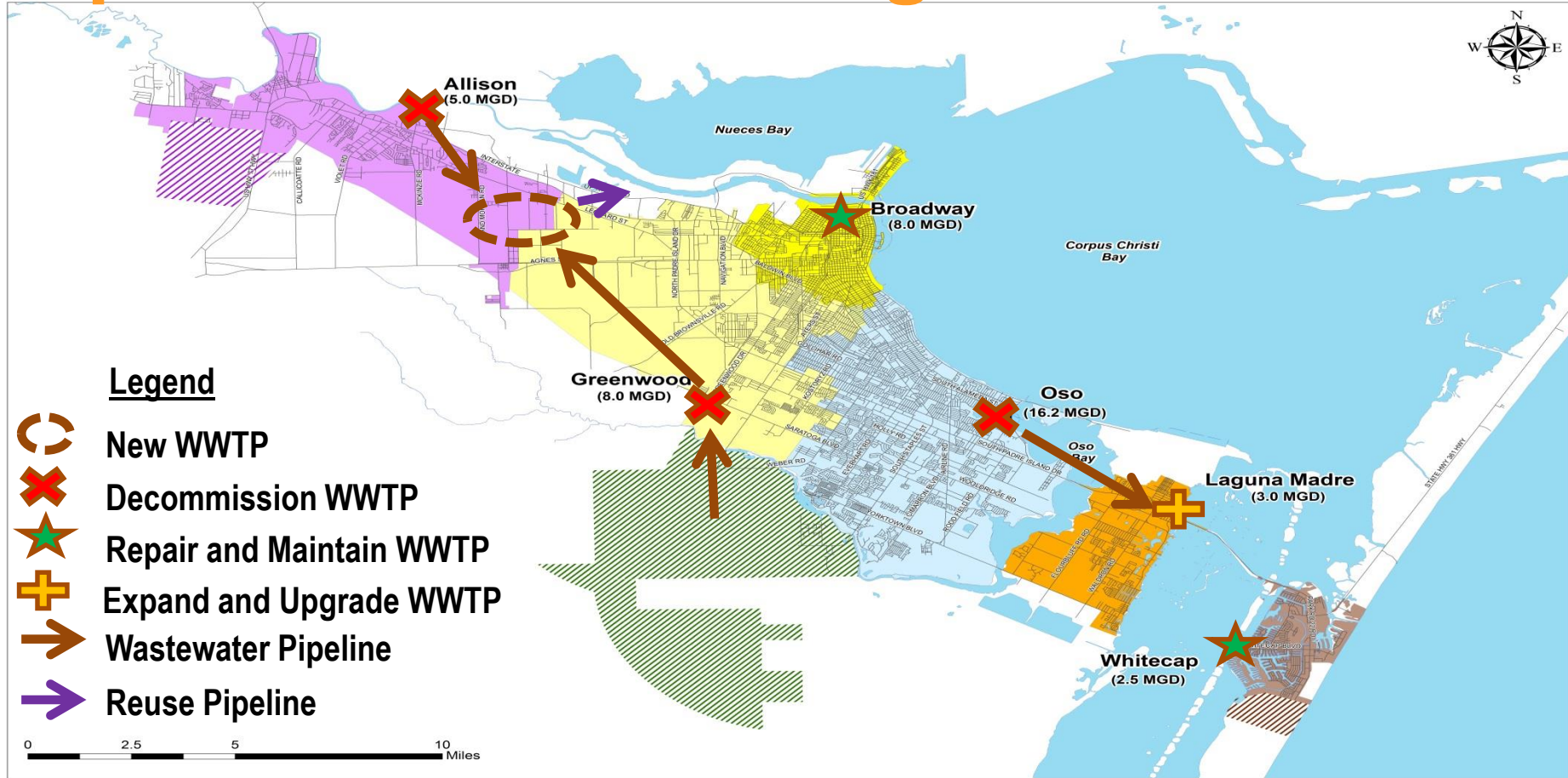
Provide Capacity for Planned Development

Capital cost for 30 Year plan estimated as \$1,100M to \$1,300M

Evaluation of Category 3 Options (Consolidate to one new site)

| | Advantages | Disadvantages |
|----|---|--|
| 3A | <ul style="list-style-type: none">• Consolidates over 85% of the City flow in one new plant• Compatible surrounding land use for new plant site• Least stringent future effluent requirements• Close to industry for reuse | <ul style="list-style-type: none">• Longest distance from Oso and Laguna Madre |
| 3B | <ul style="list-style-type: none">• Consolidates over 85% of the City flow in one new plant• Close to Greenwood for pumping of flow• Maintains base flow in Oso Creek | <ul style="list-style-type: none">• Longer distance for pumping reuse flow to industry• Most stringent future effluent requirements• Surrounding land use is residential |
| 3C | <ul style="list-style-type: none">• Consolidates over 85% of the City flow in one new plant• Close to Oso and Laguna Madre for pumping of flow | <ul style="list-style-type: none">• Longest distance from Allison• No provision for reuse to Industry• More stringent future effluent requirements• Surrounding land use is residential |

Option 4A: North & Laguna Madre



Option 4A: North & Laguna Madre

DESCRIPTION

Collection System Rehabilitation

Construct North New Plant (35 MGD) between I 37 and CC Airport

Expand and Upgrade Laguna Madre (25 MGD)

Decommission Oso and pump flow to Laguna Madre

Decommission Allison and Greenwood, pump flow to North New Plant

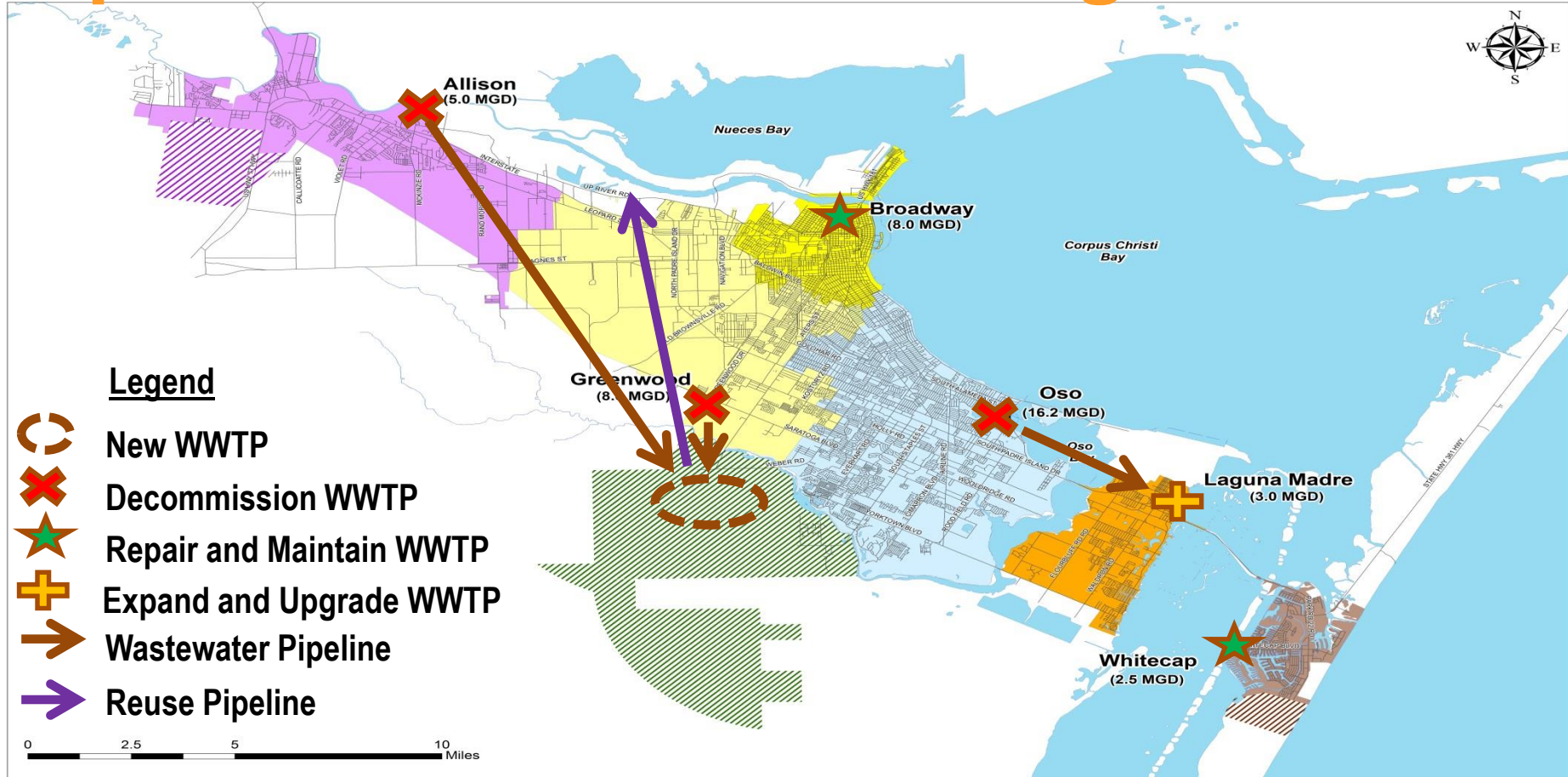
Repair and Rehabilitation of Broadway and Whitecap

Provide Reuse Water from North New Plant to Industry

Provide Capacity for Planned Development

Capital cost for 30 Year plan estimated as \$1,000M to \$1,250M

Option 4B: Southwest & Laguna Madre



Option 4B: Southwest & Laguna Madre

DESCRIPTION

Collection System Rehabilitation

Construct SW New Plant (35 MGD) south of Oso Creek near Crosstown

Expand and Upgrade Laguna Madre (25 MGD)

Decommission Oso and pump flow to Laguna Madre

Decommission Allison and Greenwood, pump flow to SW New Plant

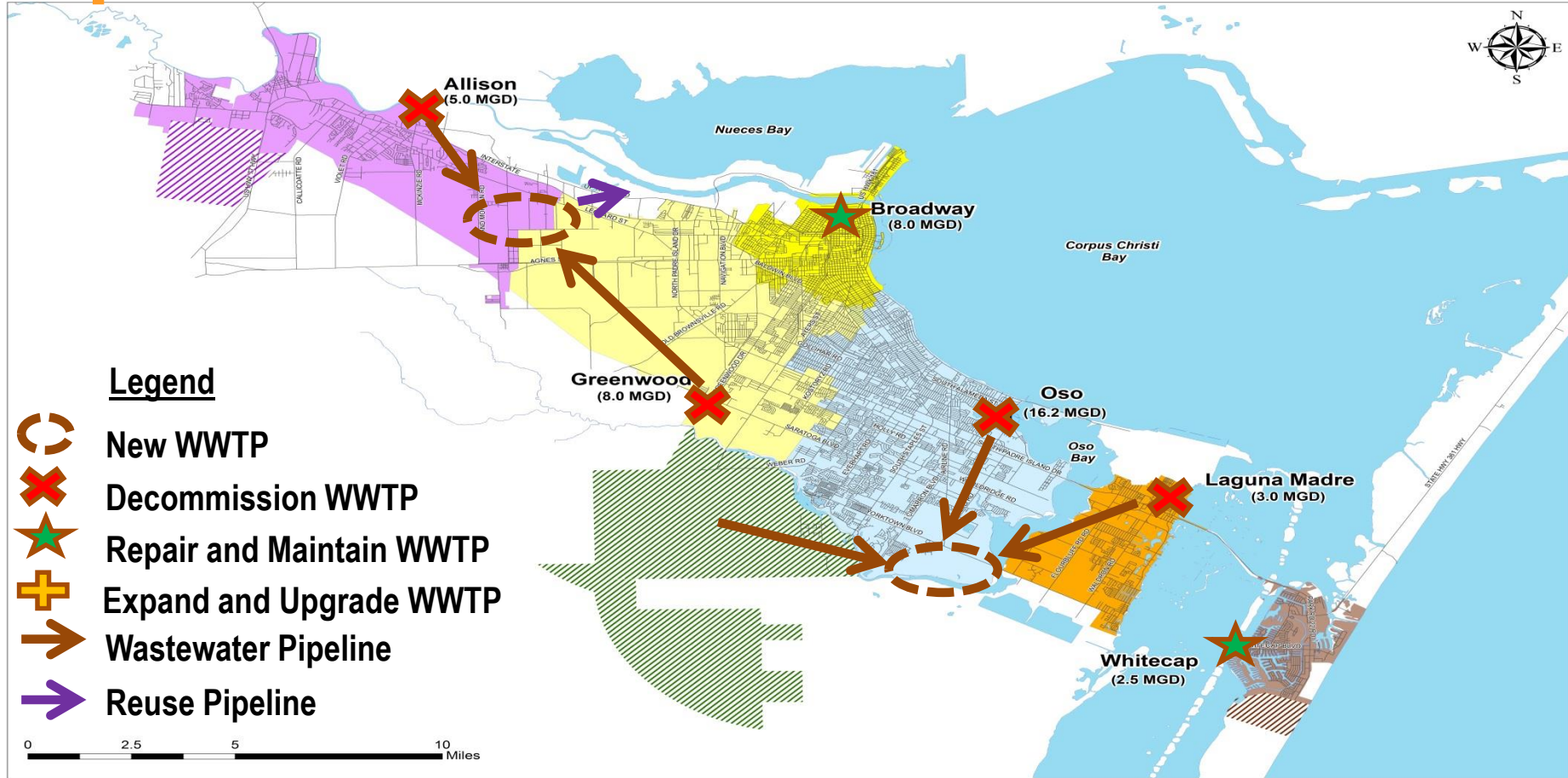
Repair and Rehabilitation of Broadway and Whitecap

Provide Reuse Water from SW New Plant to Industry

Provide Capacity for Planned Development

Capital cost for 30 Year plan estimated as \$1,050M to \$1,300M

Option 4C: North & Southeast



Option 4C: North & Southeast

DESCRIPTION

Collection System Rehabilitation

Construct North New Plant (15 MGD) between I 37 and CC Airport

Construct SE New Plant (45 MGD) south of Yorktown Rd near Oso Bay

Decommission Oso and Laguna Madre, pump flow to SE New Plant

Decommission Allison and Greenwood, pump flow to North New Plant

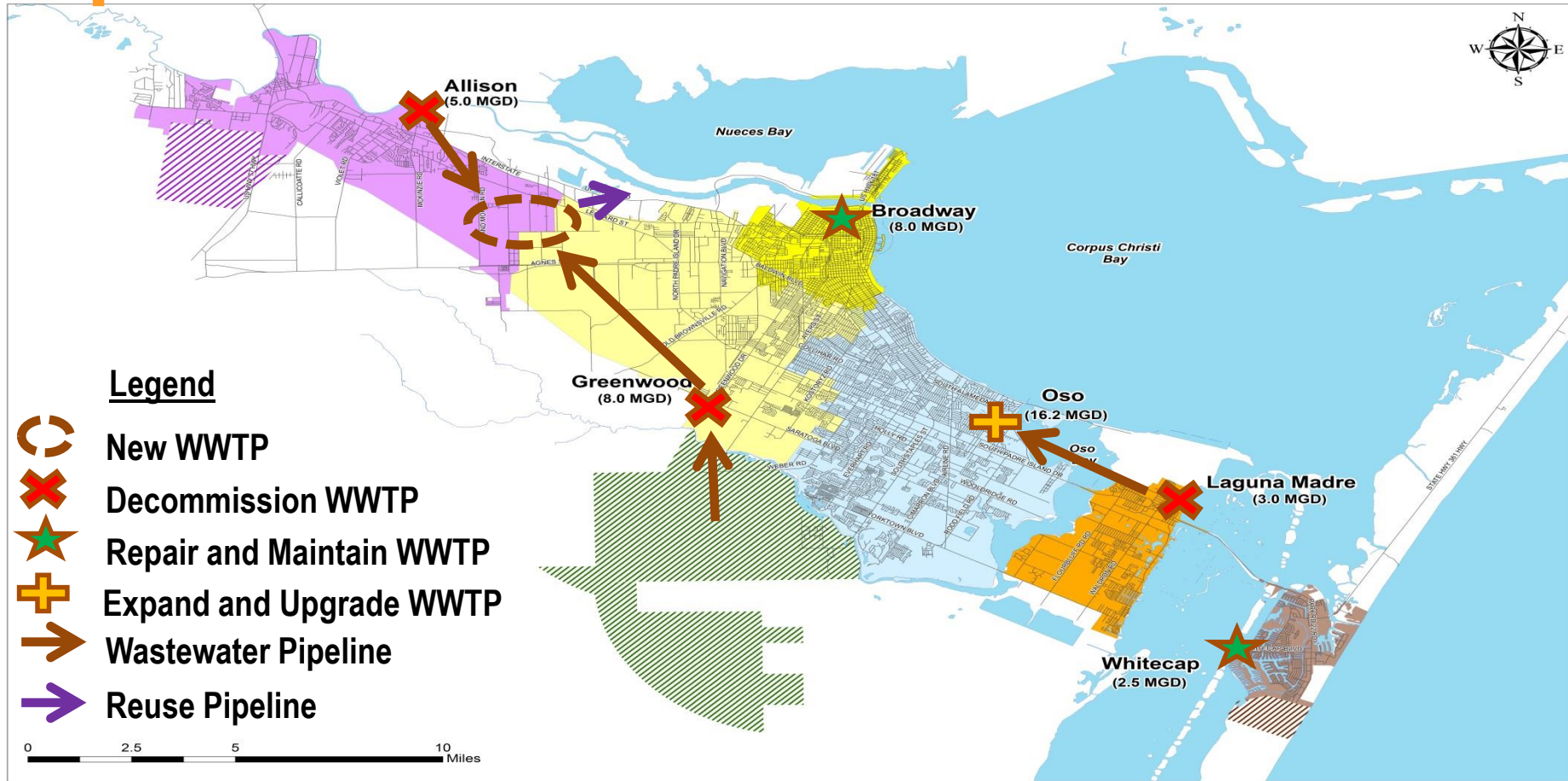
Repair and Rehabilitation of Broadway and Whitecap

Provide Reuse Water from North New Plant to Industry

Provide Capacity for Planned Development

Capital cost for 30 Year plan estimated as \$1,100M to \$1,300M

Option 4D: North & Oso



Option 4D: North & Oso

DESCRIPTION

Collection System Rehabilitation

Construct New Plant (35 MGD) generally between I 37 and CC Airport

Expand and Upgrade Oso (25 MGD)

Decommission Laguna Madre and pump flow to Oso

Decommission Allison and Greenwood, pump flow to New Plant

Repair and Rehabilitation of Broadway and Whitecap

Provide Reuse Water from North New Plant to Industry

Provide Capacity for Planned Development

Capital cost for 30 Year plan estimated as \$1,000M to \$1,200M

Evaluation of Category 4 Options (Consolidate to two sites - new/existing)

| | Advantages | Disadvantages |
|----|---|--|
| 4A | <ul style="list-style-type: none">• Consolidates over 85% of the City flow into two large plants• Compatible surrounding land use for new plant site• Less stringent future effluent requirements• Close to industry for reuse | <ul style="list-style-type: none">• Longer distance for pumping of flows from development south of Oso Creek• High upfront cost for two new facilities |
| 4B | <ul style="list-style-type: none">• Consolidates over 85% of the City flow into two large plants• SW Plant close to development areas south of Oso Creek• Maintains base flow in Oso Creek | <ul style="list-style-type: none">• Longer distance for pumping reuse flow to industry• Surrounding land use at SW Plant is residential• More stringent future effluent requirements at SW Plant |

Evaluation of Category 4 Options Cont. (Consolidate to two sites - new/existing)

| | Advantages | Disadvantages |
|----|--|---|
| 4C | <ul style="list-style-type: none">• Consolidates over 85% of the City flow into two large plants• SE Plant close to development areas south of Oso Creek• Maintains base flow in Oso Bay | <ul style="list-style-type: none">• Surrounding land use at SE Plant is residential• Requires two new sites• High upfront cost for two new facilities• More stringent future effluent requirements at SE Plant |
| 4D | <ul style="list-style-type: none">• Consolidates over 85% of the City flow into two large plants• Maintains base flow in Oso Bay• Lowest Capital cost of consolidation options | <ul style="list-style-type: none">• Requires upgrades at Oso while operating near full capacity• More stringent future effluent requirements at Oso• Expansion at Oso may not be possible due to prior agreements |