# CITY OF OREGON CITY
# URBAN RENEWAL COMMISSION
# AGENDA

Hanlon Commission Chambers, Libke Public Safety Facility, 1234 Linn Ave, Oregon City
Wednesday, August 6, 2025 at 6:00 PM

*Ways to participate in this public meeting:*

- *Attend in person, location listed above. Please see the public comment guidelines below.*
- *Attend the livestream of the meeting on the City's YouTube Channel: https://www.youtube.com/user/CityofOregonCity*
- *Register to provide electronic testimony (email recorderteam@orcity.org or call 503-496-1509 by 3:00 PM on the day of the meeting to register)*
- *Email recorderteam@orcity.org (deadline to submit written testimony via email is 3:00 PM on the day of the meeting)*
- *Mail to City of Oregon City, Attn: City Recorder, P.O. Box 3040, Oregon City, OR 97045*

1. **CALL TO ORDER AND ROLL CALL**
2. **PUBLIC COMMENTS**
3. **DISCUSSION ITEMS**
   a. The Cove Development Plans
4. **COMMUNICATIONS**
5. **ADJOURNMENT**

## PUBLIC COMMENT GUIDELINES

Complete a Comment Card prior to the meeting and submit it to the clerk. When the Chair calls your name, proceed to the speaker table, and state your name and city of residence. Each speaker is given 3 minutes to speak. As a general practice, the committee does not engage in discussion with those making comments. Complaints shall be addressed at the department level prior to addressing the committee.

## ADA NOTICE

The location is ADA accessible. Hearing devices may be requested from the City Recorder prior to the meeting. Individuals requiring other assistance must make their request known 48 hours preceding the meeting by contacting the City Recorder's Office at 503-657-0891.

**Agenda Posted at City Hall, Pioneer Community Center, Library, City Website.**

**Video Streaming & Broadcasts: The meeting is streamed live on the Oregon City's website and available on demand following the meeting. The meeting can be viewed on Willamette Falls Television channel 28 for Oregon City area residents as a rebroadcast. Please contact WFMC at 503-650-0275 for a programming schedule.**

625 Center Street
Oregon City, OR 97045
503-657-0891

# CITY OF OREGON CITY

Staff Report

**To:** Urban Renewal Commission **Agenda Date:** August 6, 2025
**From:**

**SUBJECT:**
Item 3.a. - The Cove Development Plans

**STAFF RECOMMENDATION**:
Provide staff direction as appropriate based on the Urban Renewal Commission discussion

**EXECUTIVE SUMMARY**:
The Urban Renewal Commission requested an opportunity to review previous proposals for the development of the Cove properties owned by the Agency. Staff have attached information and drawings for three development proposals that were submitted between 2008 and 2019. One difference, among many, is the transition from a mixed-use development that includes a higher percentage of square footage for office, retail and restaurant, to a mixed-use development that reduces the office, retail and restaurant uses and increases the housing units and changes the housing type from condominiums to apartments. The plans also change the use of certain tax lots, specifically near 99E, which changes from a restaurant pad to a wetland/habitat restoration site. There are many smaller changes related to building and amenity locations, building sizes, pedestrian access, parking, open space/park land, and overall project phasing as the proposal changed over time. Also included, as requested, is an excerpt of the Geologic Hazard Evaluation that was completed in December 2017.

**BACKGROUND**:

**OPTIONS:**
1. Provide staff direction as appropriate

**BUDGET IMPACT:**
Amount $
Fiscal Year(s):
Funding Source(s):

## ATTACHMENT A

## LAND USE APPROVAL HISTORY SUMMARY

### 2008 Concept Development Plan (CP 08-05)

On February 10, 2009 the City of Oregon City issued final approval of a CDP for The Cove, a master planned development surrounding the Clackamette Cove. The CDP proposed that the project would be built in eight phases over 10-years and the record established a CDP expiration date of February 10, 2019. The CDP identified that the project would be developed with the following land uses:

- 224 Condominium Units for lease—Lots 3, 4, 6 & 7;
- 8,000 square foot high turnover restaurant;
- 8,000 square foot "quality" restaurant;
- 42,300 square feet of general office; and,
- 80,000 square feet of medical office

### 2008 Detailed Development Plan (DP 08-13)

Concurrent with the 2008 CDP request, the applicant requested approval of a detailed development plan for anticipated Phase 1 site improvements. These included:

- Mass grading
    - Multi-family apartment area
    - North Park
    - Mixed Use Building and parcel south of Main Street
    - Water Quality Resource Area (Main St and Mixed Use Building)
- Infrastructure
    - Main Street (fully improved)
    - Agnes Avenue
        - Half street improvements up to North Park
        - 20-foot paved width to Washington
    - Utilities in Agnes up to North Park
- North Park final landscape improvements
- Water Quality Area landscaping around mixed-use building

**2008 Water Resource Review (WR 08-21)**

At the time that the 2008 CDP application was vested, the OCMC included Chapter 17.49, Water Quality Resource Overlay District, which included provisions regarding riparian buffer requirements. On The Cove site, the standard buffer width from the ordinary high water line (OHWL) of the Clackamette Cove was 250-feet. Through the Water Quality Resource and CDP review, the applicant requested, and the City granted, approval of a reduction of the Water Quality Resource Area (WQRA) from 250-feet to 50-feet. The applicant also requested a limited encroachment into the 50-foot buffer for the purposes of constructing a mixed use office building on Lot 1 of the development. The establishment of a 50-foot buffer through the 2008 CDP review remains valid.

**2008 Subdivision Review (TP 08-11)**

Included with the suite of approvals was a proposal to subdivide parent parcels within the aggregated Cove master plan site and dedicated public rights-fo-way. The City approved this request in conjunction with the package of requested land use approvals.

**2008 Geologic Hazards Review (US 08-03)**

The 2008 application package included a request for review under OCMC 17.44, US – Geologic Hazards. Site conditions that triggered this review included steep slopes adjacent to the south and southeast bank of Clackamette Cove. The applicant provided a geotechnical report prepared by Ash Creek Associates to validate project compliance with the applicable standards of OCMC 17.44.

**2009 Concept Development Plan Amendment (CP 09-02)**

Shortly after the original CDP (CP 08-05) was approved, the Applicant submitted a CDP amendment request filed by the City under CP 09-02. This amendment request sought to add approximately 2.5 acres of land from the "Tri-City" property to the master plan boundary, thereby increasing the total site area to 95-acres (including the 46-acres of the Clackamette Cove waterbody). Additional changes were requested in the 2009 amendment that requested the following modifications:

- Reduce the footprint of a mixed use building located in the southwest corner of the site by 10 feet in width on each side and add retail uses within the building.
- Remove two of the approved access drives in the condo building parking area to allow for a gentler slope transition into the basement parking area of the units.
- Relocate 80,000 square feet of mixed use building area from the Glazier site to an area located between Condo buildings 3 and 4. Condo buildings 3 and 4 were reduced by 22 residential units each to accommodate the addition of the mixed use building, resulting in a total of 180 condo residential units in six buildings.
- Add up to 220 apartments or up to 80,000 square feet of office use on the Glazier site.
- Add the approximately 2.5 acre Tri-City property to the concept master plan boundary.

- Relocate a proposed recreation facility along the north side of Main Street to the apartment site and remove the associated on-street parking along Main Street.

The table below identifies the changes in land uses for The Cove as requested and approved under CP-09-02.

| Land Use | 2008 CDP Approval (CP 08-05) | 2009 CDP Amendment (CP 09-02) |
|---|---|---|
| Condominiums | 224 units. Lots 3, 4, 6 & 7 | 180 units. Lots 3, 4, 6 & 7 |
| Apartments | 0 | 220 |
| Retail Sales | | 3,520 SF. Lot 1 |
| High Turnover Restaurant | 8,000 SF. Lot 1 | 6,750 SF. Lot 1 |
| Quality Restaurant | 8,000 SF. Lot 1 | 6,800 SF. Lot 1 |
| General Office | 42,300 SF. Lot 1 | 51,920 SF. Lot 1 |
| Medical Office | 80,000 SF. Lot 5 | 80,000 SF. Lot 2 |

The City approved the CDP amendment request and issued a notice of decision on October 16, 2009. The CDP modification request did not request an extension of the proposed CDP modification and therefore the original expiration of the master plan on February 10, 2009 remains unchanged. Conditions of approval were issued with the 2009 modification that amended and supplemented the conditions of approval issued under CP 08-05.

**2009 Detailed Development Plan (DP 09-01)**

Consistent with the changes proposed to the master plan under CP 09-02, the applicant proposed the following updates to the DDP with the 2009 amendment request:

*Phase 1*

1. Relocate the public restrooms in the park to a location adjacent to the northwestern parking lot, near the entrance to the amphitheater park area.
2. Increase the right of way for Agnes Avenue from 60 feet to 65 feet east of the northeast traffic circle to accommodate increase drainage swales.
3. Construct Agnes Avenue with half street improvements leading to the North Park and a 20-foot paved section to Washington Street.
4. Install landscaping at the monument at Main Street, near Firestone Alley, with Phase IV rather than Phase I as indicated in the 2008 CDP/DDP request.
5. Construct a 28 stall parking lot as required per condition of approval 2 from Planning File CP 08-05.

*Phase 2*

1. Alter the phasing of the grading of condos 3 and 4 to occur with Phase IV.
2. Complete environmental restoration of the northwestern peninsula in Phase IV to coincide with the development of the first phase of condominium buildings.

**Attachment B: Previously Approved Code Standard Adjustments**

In addition to the requested adjustments, the following adjustments have been approved with previous CDP reviews and remain valid.

**2008 CDP Approved Adjustments**

*16.12.290.A Building site--Setbacks and building location*

All lots located on a neighborhood collector, collector or minor arterial should be oriented to front the street when practical. Corner lots may have a side yard facing the street.

*17.62.055.E.2 Institutional and commercial building standards.*

Horizontal massing of the Mixed Use building may exceed a height: width ratio of 1:3 due to the provision of variation in massing and materials.

*17.52.040.A Carpool and vanpool parking.*

New retail, office commercial and industrial development with twenty-five or more parking spaces shall designate at least two (2) carpool and vanpool parking spaces. Carpool and vanpool parking spaces shall be located closer to the main employee or commuter entrance than all other employee parking spaces with the exception of handicapped parking spaces. The carpool/vanpool spaces shall be clearly marked "Reserved – Carpool/Vanpool Only."

*17.62 & 17.34 Maximum Building Setbacks*

No maximum setbacks shall apply to the Concept Development Plan boundary provided that actual development substantially conforms to the Concept Development Plan.

*17.49.050.H.5.c Water quality resource area standards.*

A walkway or bike path shall not exceed twenty (20) feet in width.

*17.52.010 Number of spaces required*

| Land Use | Parking Requirements: The parking requirements are based on spaces per 1,000 SF gross leasable area unless otherwise stated | |
|---|---|---|
| | Minimum | Maximum |
| Medical or Dental Clinic | N/A | 3.33 |

The maximum parking ratio for a medical or dental clinic or office use shall be set at five (5) spaces per 1,000 SF of gross leasable area.

*17.52.090.2.a&b Parking lot landscaping.*

The adjustment to these standards was approved to allow landscaping in conformance with the Landscape Plan provided in the original submittal.

*17.62.055.F Institutional and commercial building standards.*

The adjustment to these standards was approved to allow for development of the site as proposed within the plans included with the original Master Plan submittal.

**2015 CDP Amendment Approved Adjustments**

*17.44 Applicability of the Geologic Hazards Overlay District*

The applicant requested an adjustment to the applicability of the Geologic Hazards Overlay as applied to garden apartments site.

*17.52.030 Standards for Automobile Parking*

The applicant is requesting modifications to OCMC 17.52.030(B-C) for the proposed temporary trailhead parking lot to limit the requirement of permanent improvements (paving and stormwater management) with this temporary feature.

*17.52.030 and 17.52.060 Standards for Automobile Parking Lots.*

Allow a temporary gravel parking lot that does not comply with the parking lot standards or landscaping standards. 17.65.070.D.

*17.54.100.A.1. Rockery walls along Main Street.*

Allow rockery walls up to 5 feet in height in front of the structures, exceeding the maximum wall height of 3.5 feet in front of a structure.

*17.54.100.B Western Retaining Walls.*

Allow up to a 17-foot tall retaining wall between the subject site and the adjoining Oregon City Shopping Center, exceeding the 8.5-foot requirement. 17.65.070.D

*17.62.055.F Commercial First Floor Frontage*

Reduce the minimum commercial first floor height from 14-feet to 12-feet for the office and restaurant uses in Buildings 3 and 5 on Lot 2.

*17.62.057. Multifamily Standards*

Adjust the lighting standards for the temporary trail and temporary trailhead parking lot so no lighting is required and the pedestrian accessway standards in OCMC 12.04.199 for the temporary Clackamette Cove alignment in Phase 1.

## Attachment C: Findings for Specific Architectural Standards

Based on our interpretation and past discussions with City staff, it is believed that the following code sections would not require an adjustment. However, the applicant will be providing detailed responses to these code sections as an attachment to the application narrative.

### 17.52.030 - Standards for automobile parking.

**A. Access. Ingress and egress locations on public thoroughfares shall be located in the interests of public traffic safety. Groups of more than four parking spaces shall be so located and served by driveways so that their use will require no backing movements or other maneuvering within a street right-of-way other than an alley. No driveway with a slope of greater than fifteen percent shall be permitted without approval of the city engineer.**

**Response:** All off-street parking is accessed via a driveway consistent with this requirement.

### 17.54.010.B(3) Accessory Structures with a Footprint Over Six Hundred Square Feet

**(d) Shall not exceed eight hundred square feet; and**
**(f) Shall be located behind the front line of the primary structure**

**Response:** This standard does not apply to multi-family or commercial.

### 17.54.020 - Projections from buildings.

**Response:** Setbacks do not apply to the proposed development. Therefore, this standard does not apply.

### 17.54.105 - Live/work units.

**A. The ground floor business shall provide visibility, signage and access from the primary street. The building in which the live/work dwelling is located shall architecturally differentiate the ground floor commercial/office space from the rest of the building by meeting the following requirements:**

**2. Windows shall begin thirteen to thirty inches above the sidewalk rather than continue down to street level. Large single paned windows over ten feet in width shall be divided into multiple panes to add human scale by dividing the vertical plane into smaller parts.**

**Response:** Live/work units in both Buildings B and D have windows that begin 30 inches above sidewalk. Therefore, this standard is met.

## 17.62.050.A - Standards.

1. **Landscaping, A minimum of fifteen percent of the lot shall be landscaped. Existing native vegetation shall be retained to the maximum extent practicable. All plants listed on the Oregon City Nuisance Plant List shall be removed from the site prior to issuance of a final occupancy permit for the building.**

**Response:** Per 17.34.060.I, the 10% minimum landscaping requirement takes precedent over this standard. Therefore, the 15% minimum landscaping standard does not apply. It should be noted that draft municipal code changes, if adopted later this year, will eliminate this standard.

17. **All utility lines shall be placed underground.**

**Response:** Agnes Extension, which included above ground utilities is no longer proposed as part of the CDP amendment. All other utilities will be placed underground.

19. **For a residential development, site layout shall achieve at least eighty percent of the maximum density of the base zone for the net developable area. Net developable area excludes all areas for required right-of-way dedication, land protected from development through Natural Resource or Geologic Hazards protection, and required open space or park dedication.**

**Response:** The MUD base zone does not prescribe a maximum density.

21. **Building Materials.**

a. **Preferred Building Materials. Building exteriors shall be constructed from high quality, durable materials. Preferred exterior building materials that reflect the city's desired traditional character are as follows:**

   i. **Brick.**
   ii. **Basalt stone or basalt veneer.**
   iii. **Narrow horizontal wood or composite siding (generally five inches wide or less); wider siding will be considered where there is a historic precedent.**
   iv. **Board and batten siding.**
   v. **Other materials subject to approval by the community development director.**
   vi. **Plywood with battens or fiber/composite panels with concealed fasteners and contiguous aluminum sections at each joint that are either horizontally or vertically aligned.**

vii. **Stucco shall be trimmed in wood, masonry, or other approved materials and shall be sheltered from extreme weather by roof overhangs or other methods.**

**Response:** Per City staff, fiber cement board qualifies as a preferred material. Therefore, high quality, durable materials are proposed. Prohibited materials are not proposed. It should be noted that draft municipal code changes, if adopted later this year, will remove this standard.

## 17.62.055 Institutional and commercial building standards.

**G. Variation in Massing.**

2. **Horizontal masses shall not exceed a height: width ratio of one-to-three without substantial variation in massing that includes a change in height and projecting or recessed elements.**

**Response:** As evidenced by the previously approved adjustments included in Attachment B, horizontal massing of the mixed use buildings may exceed a height: width ratio of 1:3 due to the provision of variation in massing and materials. Therefore, this standard does not apply. It should be noted that draft municipal code changes, if adopted later this year, will remove this standard.

**H. Minimum Wall Articulation.**

3. **Ground floor facades that face public streets shall have arcades, display windows, entry areas, awnings or other such features along no less than sixty percent of their horizontal length.**

**Response:** Street façade of Buildings A meets the 60% minimum required amount of commercial features by utilizing canopies over the entries, therefore an adjustment is not needed.

**I. Facade Transparency.**

1. **Transparent windows or doors facing the street are required. The main front elevation shall provide at least sixty percent windows or transparency at the pedestrian level.**

**Response:** For Buildings A the façade facing the public street has 365 SF of glazing which constitutes 60% of transparency, therefore an adjustment is not needed.

## 17.62.057 - Multi-family standards.

**F. Pedestrian Circulation.**

1. **Pathways between dwelling units entrances and the street are required. Such pathways between the street and buildings fronting on the street shall be in a straight line. Exceptions may be allowed by the director where steep slopes prevent a direct connection or where an indirect route would enhance the design and/or use of a common open space.**

**Response:** Pathways are provided between dwelling unit entrances and the street in a straight line. Where pathways cross a drive aisle, a different material is proposed.

**G. Architectural and Material Standards.**

**3. Roofline standards.**

**a. Single purpose residential buildings in residential districts must provide a pitched roof with minimum 6:12 roof pitch. The maximum width of any continuous roofline shall be thirty-five feet**

**Response:** No single-purpose buildings are proposed. Therefore, this standard does not apply.

**K. Building Materials.**

**All multifamily buildings shall be enhanced with appropriate details. Each of the types of details listed below are worth one point. Multifamily buildings must achieve the equivalent of five points worth of architectural details.**

**1. Decorative porch design with distinct design and use of materials.**

**2. Decorative treatment of windows and doors, such as decorative molding/framing details around all ground floor windows and doors, bay windows, decorative glazing, or door designs, and/or unique window designs.**

**3. Landscaped trellises or other decorative element that incorporates landscaping near the building entry or entries.**

**4. Decorative light fixtures with a diffuse visible light source, such as a globe or "acorn" that is non-glaring or a decorative shade or mounting for each building entry on the facade.**

**5. Brick or stonework covering more than fifteen percent of the facade.**

**6. Decorative building materials that add visual interest, including:**

**a. Individualized patterns or continuous wood details.**

**b. Decorative moldings, brackets, wave trim or lattice work.**

**c. Other materials with decorative or textural qualities as approved by the director. The applicant must submit architectural drawings and material samples for approval.**

**7. Decorative roofline design, including multiple gables and/or dormers, decorative parapet or other design that adds distinct visual interest.**

**8. Decorative railings, grill work, or terraced landscape beds integrated along the facade of the building.**

**9. Other details that meet the intent of the guidelines as approved by the director.**

**Response:** The following five architectural details are incorporated into all buildings:

- #3 Decorative element that incorporates landscaping near the building entry or entries (1 point)
- #4 Decorative light fixtures with a diffuse visible light source for each building entry on the façade (1 point)
- #5 Brick or stonework at the ground level facing public areas (1 point)
- #6 Decorative building materials that add visual interest including: multiple horizontal reliefs and/or patterns in ground level brick or stone, continuous water table/sill trim above brick or stone, change of material at the top floor with decorative trim (1 point)
- #8 Decorative balcony railing along the façade of the building (1 point)
- #9 Extra windows provided on the upper stories (1 point)
- #9 Use of preferred building materials in a variety of ways above what the code requires (1 point)

Therefore, the building façade incorporates appropriate visual relief and this standard is met.

**Attachment D: Comparison of 2015 Phasing and Proposed Phasing**

| 2018 Proposed Phasing Plan | 2015 Approved Phasing Plan |
|---|---|
| **Phase 1** | |
| No changes are proposed to Phase 1 | Infrastructure:<br>• Main Street: Lot 2 frontage street improvements<br>• Agnes (Temporary connection to temporary parking lot)<br>• Roundabout construction at Agnes and Main Street |
| | Lot 1:<br>• Approximately 4,000 cubic yards of cut transferred to Garden Apartment site. |
| | Lot 2:<br>• 244 Garden Apartments, ancillary parking structures and clubhouse<br>• 5,500 SF General Office (not medical or dental office)<br>• 1,000 SF Deli/Coffee Shop |
| | Lot 3:<br>• Temporary trailhead parking lot |
| | Tract B:<br>• Phase 1 NROD Mitigation |
| | Tract D:<br>• North Park excavation |

**Attachment D: Comparison of 2015 Phasing and Proposed Phasing**

| Phase 2A | Phase 2 |
|---|---|
| Infrastructure:<br>• Agnes Avenue ROW: Construct Agnes Avenue<br>○ From Main Street Roundabout to Cul-De-Sac at the Tri-Cities property located at the northeast corner of the master plan area.<br>○ Complete prior to first Phase 2 Certificate of Occupancy | Infrastructure:<br>• Agnes fully improved through the Cove site<br>• Esplanade & Tract C in front of 195 waterfront units<br>• Approximately 350-lineal feet of Main Street from Lot 2 improvements to the east end of the permanent trailhead parking<br>• Agnes Avenue Extension |
| Tri-Cities Property:<br>• Emergency Egress: Construct temporary access across Tri-Cities property<br>○ Construct a temporary emergency vehicular and pedestrian connection from the cul-de-sac at north end of Agnes Avenue through Tract E to connect to the existing internal roadway at the sewer plant, and other revisions to the security gate connection to the end of Agnes Avenue east of the sewer plant.<br>○ 20-foot wide paved temporary road over compacted landfill site; address storm water treatment and capacity.<br>○ Loop waterline connection through WES property not affected by landfill. Complete prior to first Phase 2 Certificate of Occupancy | |

**Attachment D: Comparison of 2015 Phasing and Proposed Phasing**

| | |
|---|---|
| Lot 1: Excavation, grading, and habitat improvements<br>• Improvements to the temporary trailhead parking lot that meet city standards, unless deferred to Phase 2B.<br>• Complete prior to first Phase 2 Certificate of Occupancy, unless deferred<br>• Excavation to balance cut and fill in floodplain. (If Required)<br>• NROD habitat enhancement (If required) | Lot 1:<br>• Phase 2 NROD Mitigation Plantings |
| Lots 3, 4, 5, 6, 7, 8, 9, 10: Five buildings<br>• Approximately 240 apartment units and live-work units.<br>• Commercial and retail space with possible restaurants<br>• The five lots will be re-platted into eight lots. | Lots 3, 4, 5, 6, 7: Five buildings<br>• 195 waterfront units for lease<br>• (2) High turnover restaurants (Total 3,250 SF)<br>• 8,712 SF General Office (not medical or dental office)<br>• 5.28 acres of park |
| Tract A: Excavation, grading, and trailhead improvements<br>• Improvements to the temporary trailhead parking lot that meet city standards, unless provided on Lot 1 or deferred to Phase 2B.<br>• Grading for floodplain balance (if required) | |

**Attachment D: Comparison of 2015 Phasing and Proposed Phasing**

| | |
|---|---|
| Tract B: Excavation and habitat Improvements1<br>• All work is limited to the area above the Ordinary High Water line.<br>• Excavation at the future North Beach.<br>• Reduce slope at over-steepened bank between the Cove and the esplanade.<br>• Landscaping and habitat enhancement between the cove and esplanade consistent with NROD requirements.<br>• Excavation at the future South Beach<br>• NROD habitat improvements at peninsula.<br>• Complete prior to first Phase 2 Certificate of Occupancy. | |
| Tract C: Esplanade construction<br>• Complete prior to first Phase 2 Certificate of Occupancy. | |
| Tract D: Excavation, grading and NROD enhancement and/or mitigation, and Public Parking<br>• Expand LIDA treatment facility.<br>• Possible NROD habitat enhancement and/or mitigation.<br>• North Park parking lot drive aisles for emergency access connectivity<br>• Complete prior to final Phase 2 certificate of occupancy.<br>• Easement to the Cove, LLC property.<br>• Trash enclosure with easement for use by Lots 3-10 | Tract D:<br>• Final improvements at North Park |
| **Phase 2B** | |
| Lots 3, 4, 5, 6, and 7: Three buildings<br>• Approximately 164 apartment units and live-work units. | |
| Tract D:<br>• Construct North Park parking stalls with approximately 39-48 spaces | |

[1] It is anticipated that Phase 2 may include dredging under the city's current dredging permit on an as-needed basis, but that any necessary permitting for these activities will be conducted through a separate permitting process. No dredging-related permits are requested in conjunction with this CDP amendment, NROD or geologic hazards review application.

**Attachment D: Comparison of 2015 Phasing and Proposed Phasing**

| Phase 3 | |
|---|---|
| Lot 1:<br>• Possible Excavation and Grading, and Habitat Improvements | |
| Tract B: Excavation and Water Quality and Habitat Improvements<br>• Dredging and/or other water quality improvements.<br>• Create NRDA habitat for mitigation bank.<br>• Possible NROD enhancement or mitigation.<br>• North Beach sand and recreation improvements.<br>• South Beach sand and recreation improvements.<br>• South Beach natural play area. | |
| Clackamas River:<br>• Construct facilities to enhance water flow into the cove.<br>• Possible additional dredging and other work in the Clackamas River. | |
| | Tri-City Property<br>• Parking Lot —272 spaces with 50 public spaces |
| | Lot 5:<br>• 70,000 SF Office<br>• (2) High turnover restaurants (Total 2,700 SF) |

**Attachment D: Comparison of 2015 Phasing and Proposed Phasing**

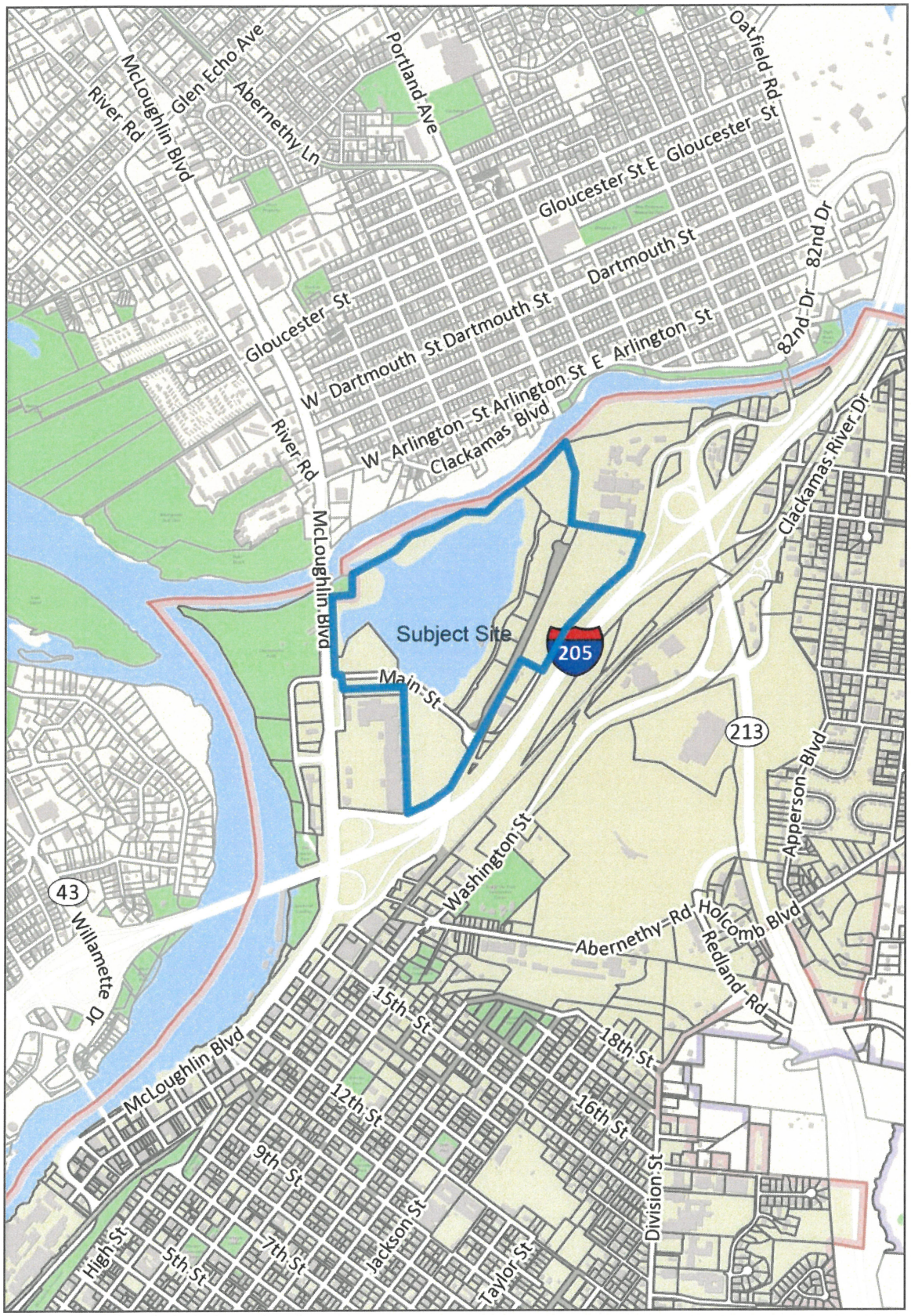
| Phase 4 | |
|---|---|
| Lot 1: New building(s), parking, and/or habitat improvements<br>• Possible residential structures on top of the parking structure.<br>• Possible commercial structures on top of the parking structure.<br>• Possible 2 story Parking Garage<br>• Possible NRDA Habitat for mitigation bank<br>• Possible NROD Habitat Enhancement or Mitigation<br>• Possible surface parking lot - public and private Parking.<br>• Trailhead parking (unless trailhead parking is provided on Lot 11 (Tract A))<br>• Coordinate with Phase 3 development | Lot 1:<br>• 50,400 SF Mixed Use Office on Lot 1 (will allow for medical-dental office)<br>• 4,000 SF "Quality" restaurant<br>• 4,000 SF "Quality" restaurant |
| Lot 11 (Tract A): New building(s), parking, and/or habitat Improvements<br>• Possible residential structures on top of the parking structure.<br>• Possible commercial structures on top of the parking structure.<br>• Possible 2 story parking garage - public and private parking.<br>• Possible NRDA habitat for mitigation bank<br>• Possible NROD habitat enhancement or mitigation<br>• Possible surface parking lot - public and private parking. | |
| Infrastructure:<br>• Completion of approximately 450-lineal feet of Main Street along the Lot 1 frontage | Infrastructure:<br>• Completion of approximately 450-lineal feet of Main Street along the Lot 1 frontage |

**Attachment D: Comparison of 2015 Phasing and Proposed Phasing**

| Phase 5 | |
|---|---|
| Tract B:<br>• Additional excavation and placement of sand at North Beach.<br>• Access walkways and stairs at North Beach<br>• Additional excavation and placement of sand at South Beach.<br>• Access walkways and stairs at North Beach<br>• Swimming Dock<br>• Boating Dock<br>• Water Sports Center | Tract B:<br>• Two Marinas (One public, one private) with combined total of 150 slips<br>• Outdoor water sports center, seasonal use. |
| | Lot 1<br>• Installation of a transient moorage dock |


22E29 02800
URA OF OREGON CITY
LOT 1
22E29 03500
OF OREGON CITY
TRACT A
22E29 03600
URBAN RENEWAL AGENCY (URA)
OF OREGON CITY
TRACT B
22E20 011
URA OF OREGO
TRACT D
22E29 03400
URA OF OREGON CITY
LOT 7
22E29 03700
URA OF OREGON CITY
TRACT C
LOT 6
LOT 5
LOT 4
LOT 3
22E29 03000
URA OF OREGON CITY
22E29 01509
TRI-CITY
SERVICES DISTRICT
22E29 02900
WOODLEY
PROPERTIES INC
LOT 2

# Figure 2: Vicinity Map

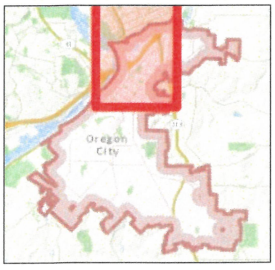



**Legend**

- Taxlots
- Taxlots (Outside UGB)
- Unimproved ROW
- City Limits
- UGB
- Basemap

**Notes**

**Overview Map**



The City of Oregon City makes no representations, express or implied, as to the accuracy, completeness and timeliness of the information displayed. This map is not suitable for legal, engineering, surveying or navigation purposes. Notification of any errors is appreciated.

N

0 Feet

1: 17,482

City of Oregon City
PO Box 3040
625 Center St
Oregon City
OR 97045
(503) 657-0891
www.orcity.org

Map created 10/12/2015

# The Cove

MIX USE WATERFRONT:

109 Acres

Oregon City, Oregon

Waterfront Condos: 224

Medical / Office: 75,000 sq ft

Office / Restaurants: 58,400 sq ft

Esplanade / Plaza / Restaurants

Trail on rivers edge

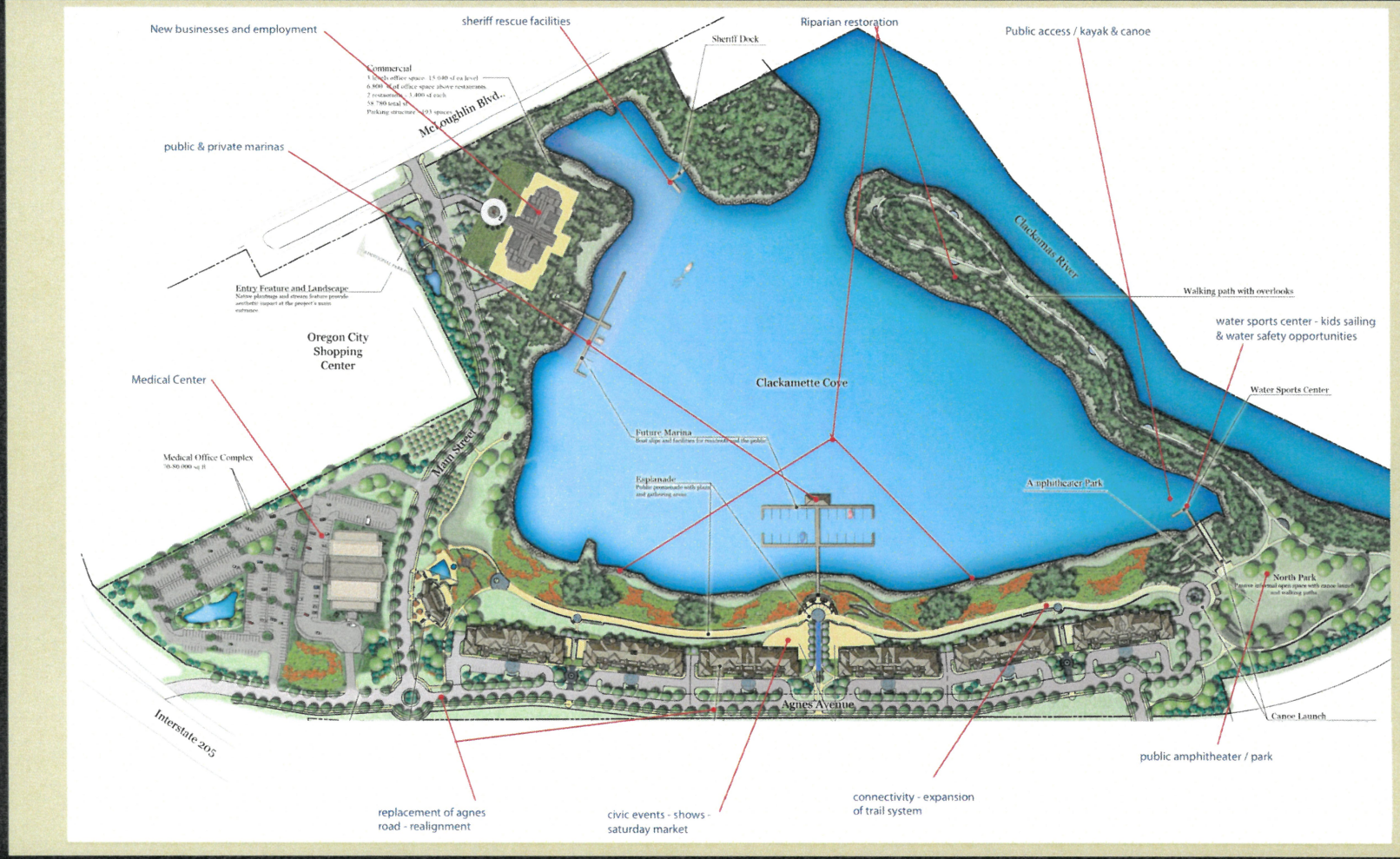
Boat condo slips

Water Sports Center (for kids)

Canoe launch.

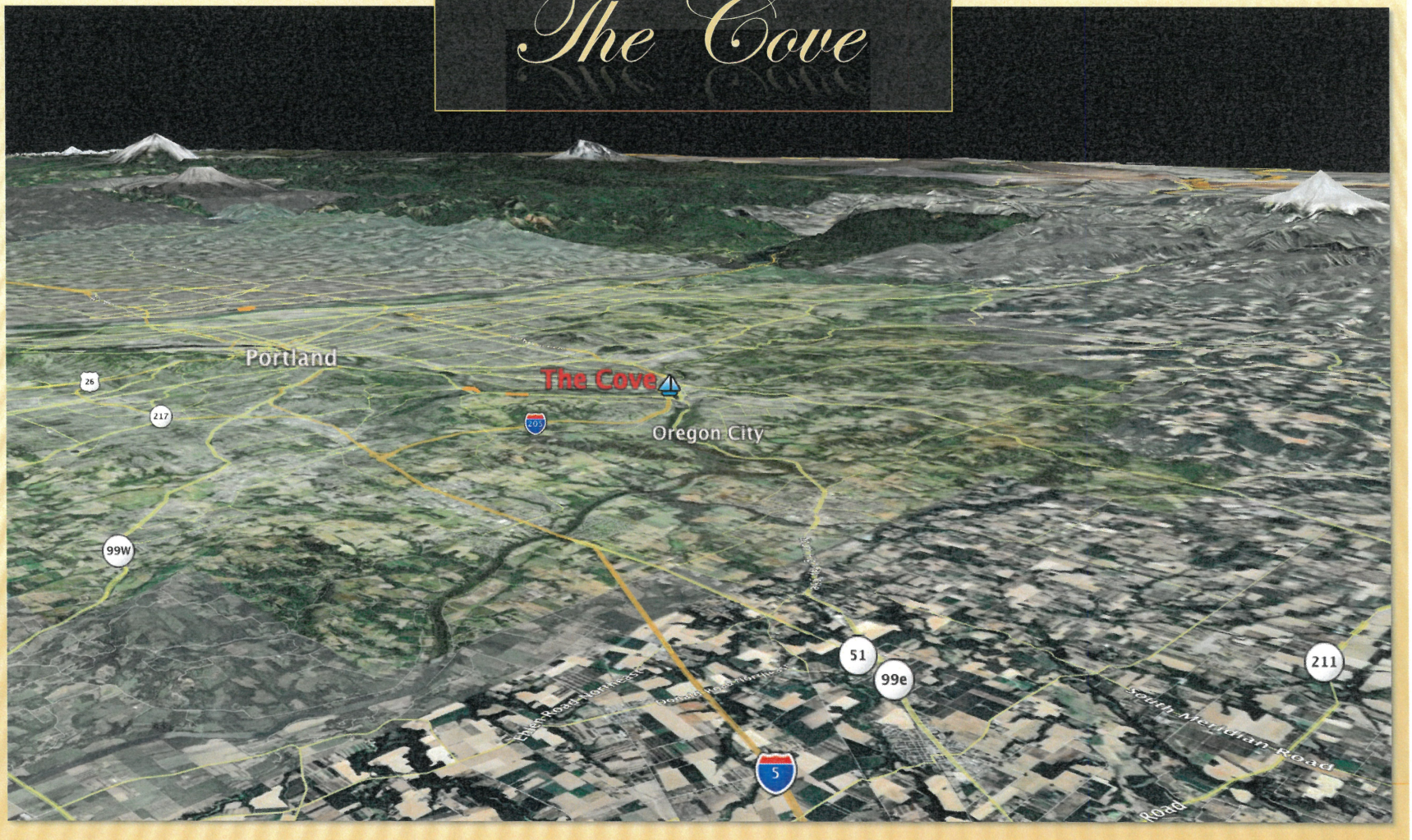
STATUS:

1. Final Master plan and elevations submitted to City – minor changes currently being made
2. Working with contractors for pricing of infrastructure
3. Urban Renewal Agency investing over $10,000,000 in this project
4. Over 72% of the site will be open space




# PUBLIC & PRIVATE BENEFITS

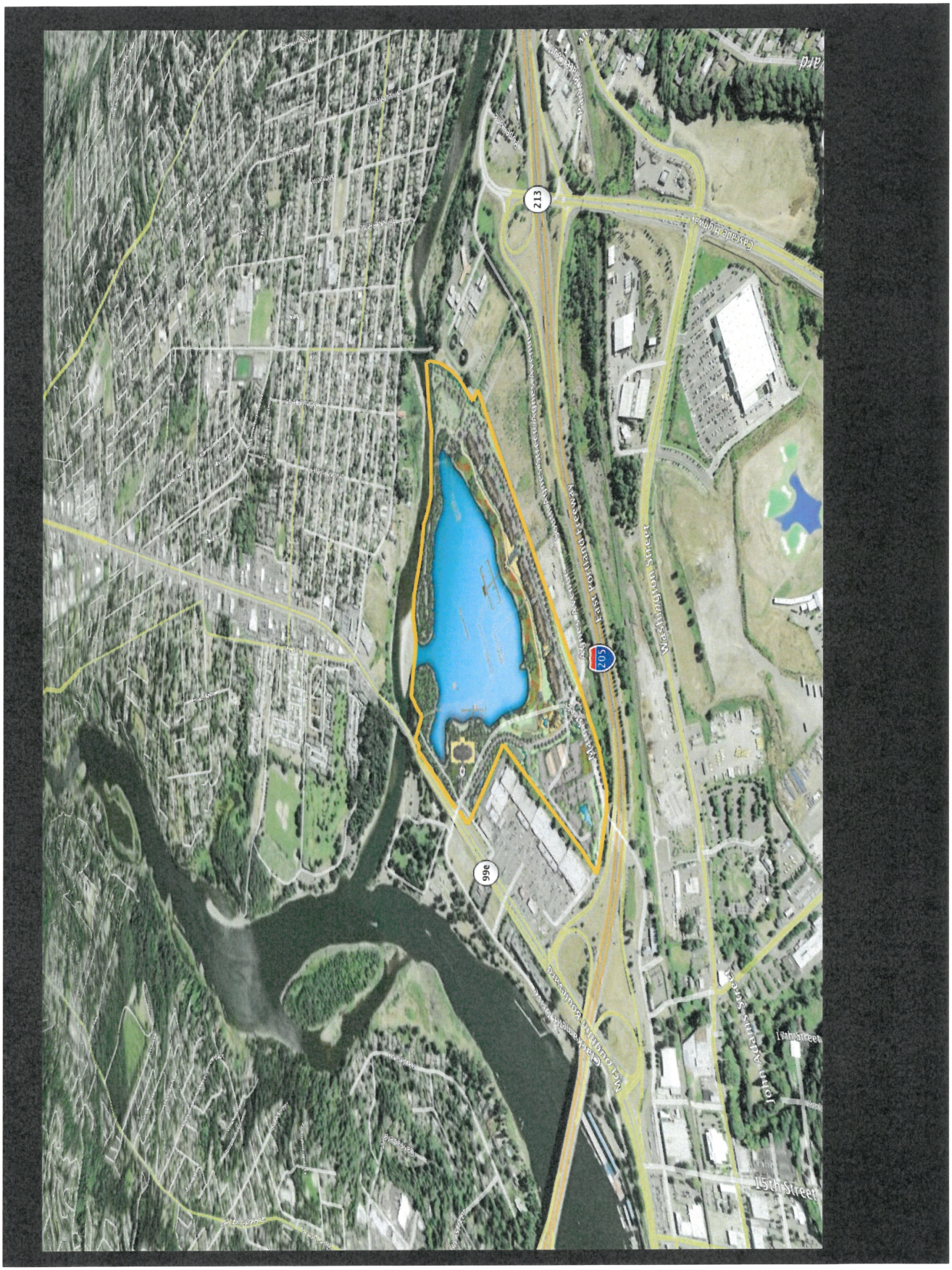
# The Cove



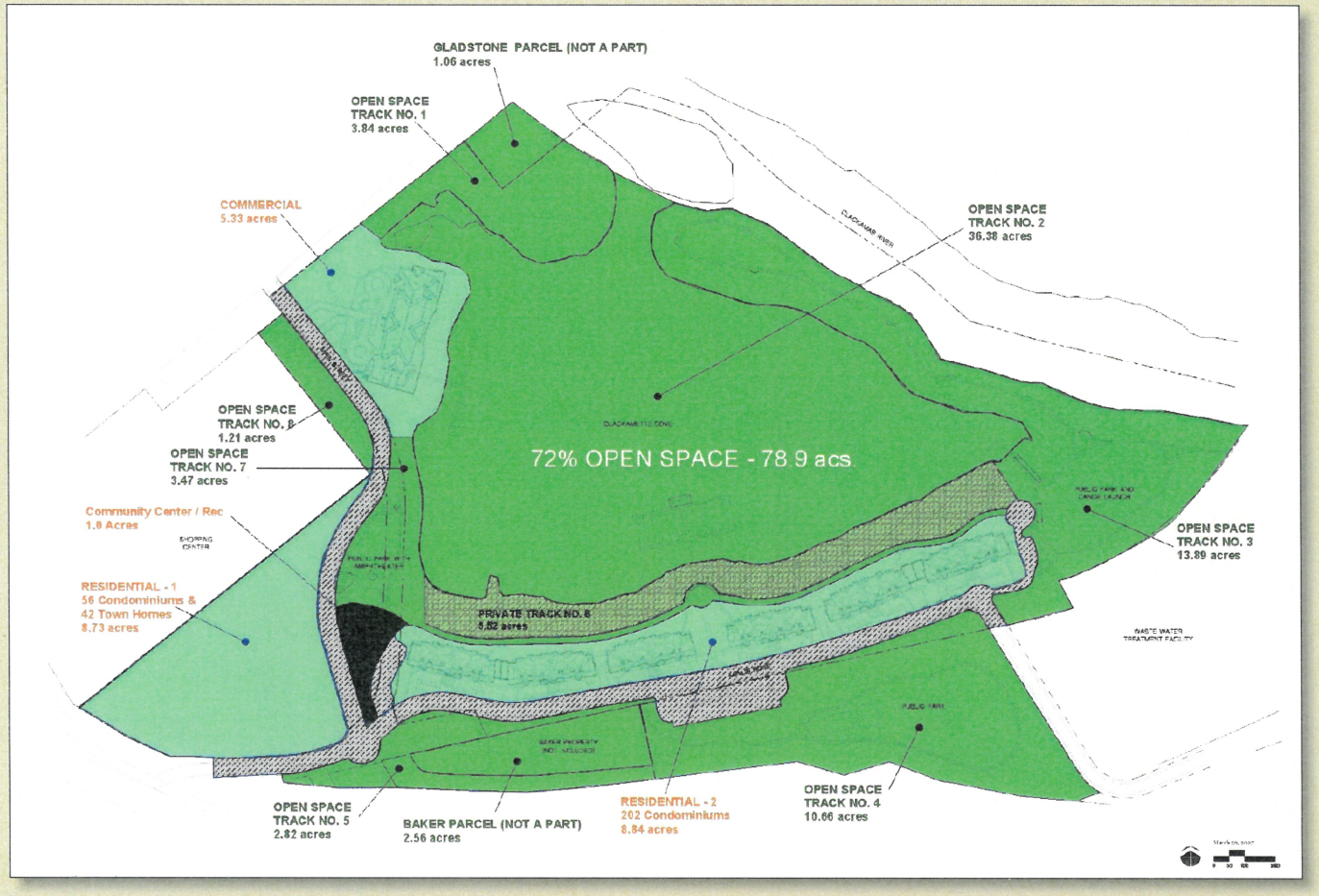

The site is located in Oregon City just north of the 205 freeway and approximately 10 miles from down town Portland. The Cove is within a reasonable commute to the major employment centers of downtown Portland, Clackamas, West Linn, and Wilsonville.

PROPOSED PROJECT Aerial Map



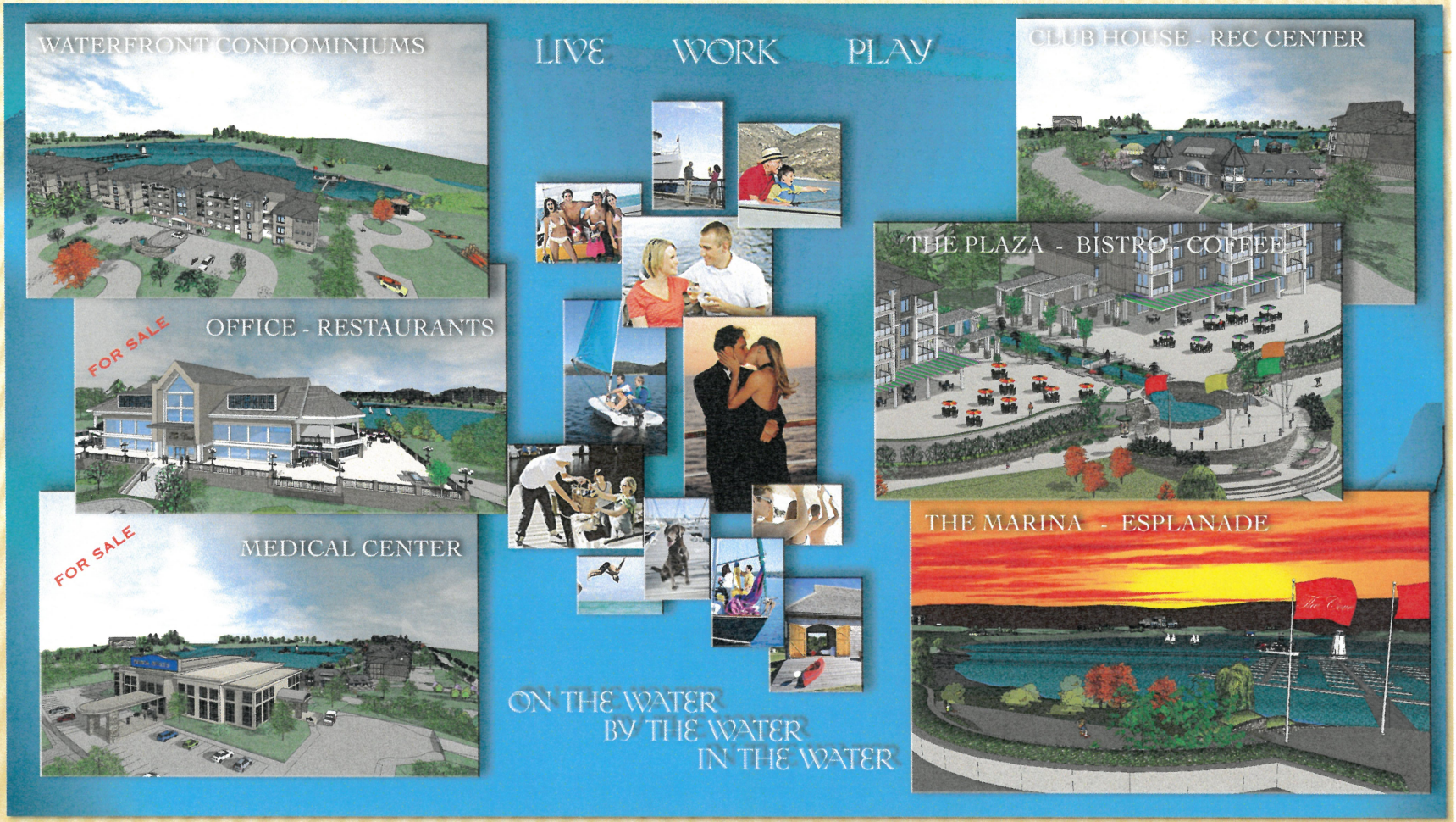

213
205
99e
Washington Street
John Adams Street
15th Street

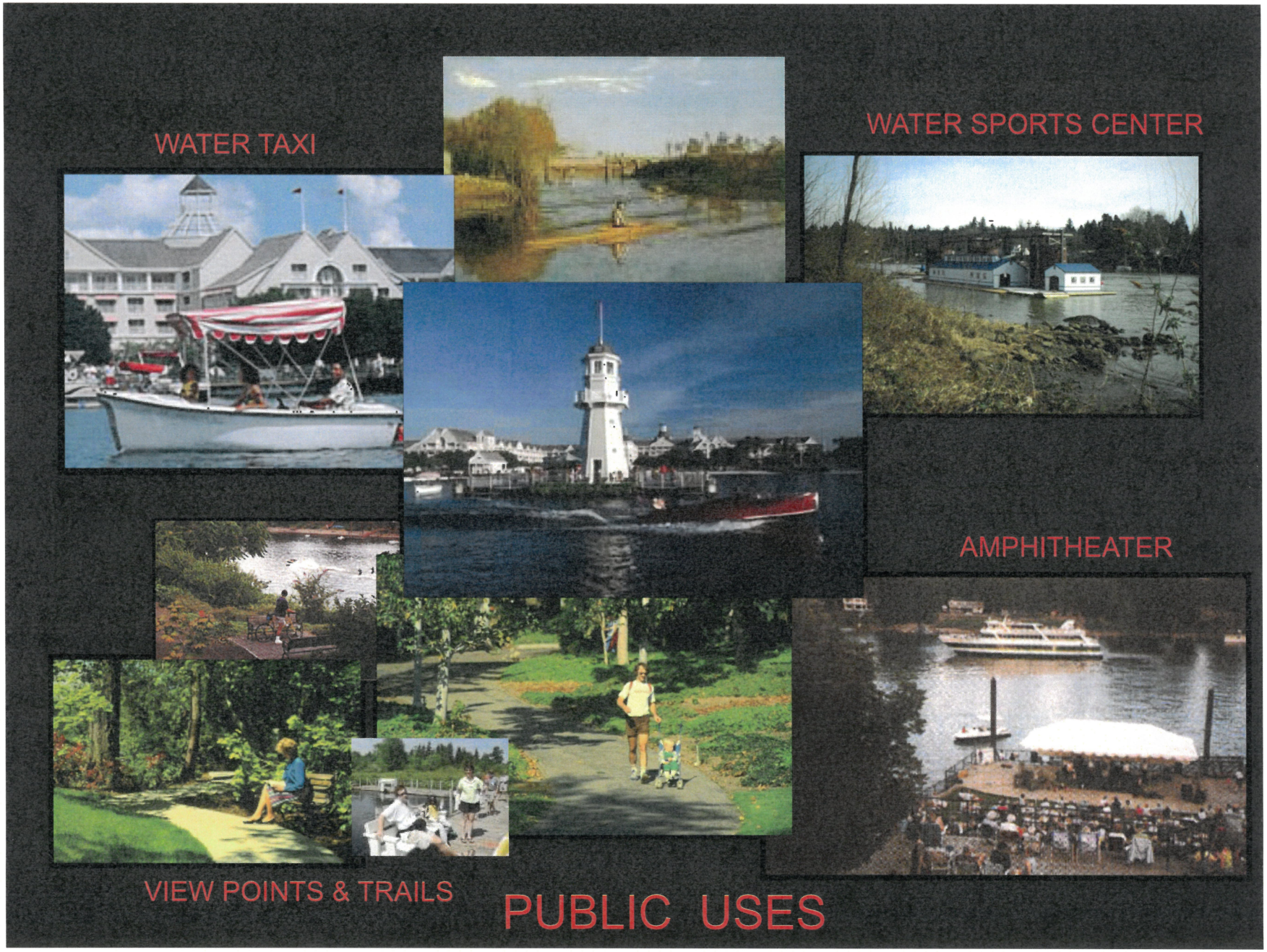
East Portland Freeway
205
99E

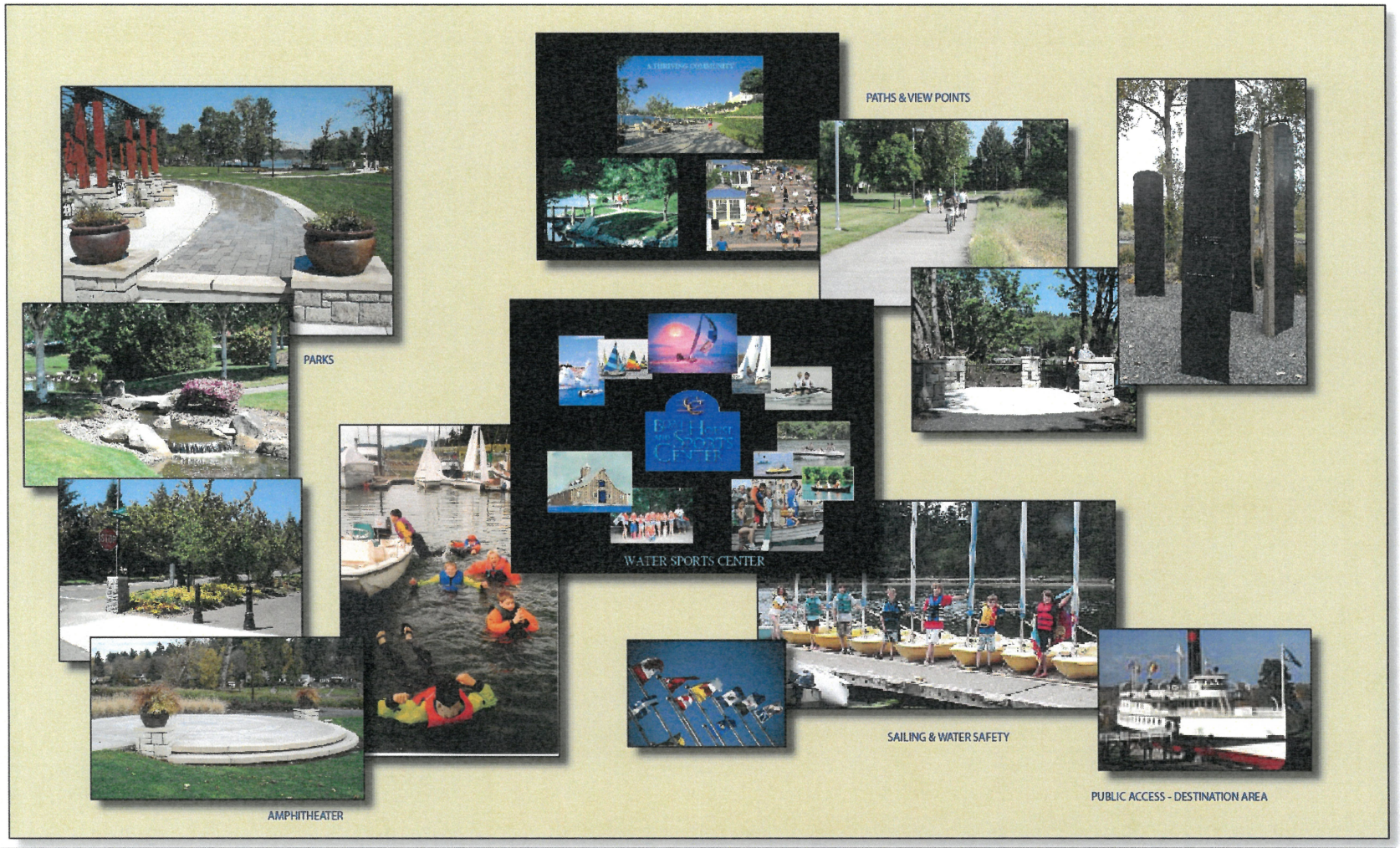

GLADSTONE PARCEL (NOT A PART)
1.06 acres
OPEN SPACE
TRACK NO. 1
3.84 acres
COMMERCIAL
5.33 acres
OPEN SPACE
TRACK NO. 2
36.38 acres
OPEN SPACE
TRACK NO. 8
1.21 acres
OPEN SPACE
TRACK NO. 7
3.47 acres
72% OPEN SPACE - 78.9 acs.
Community Center / Rec
1.8 Acres
RESIDENTIAL - 1
56 Condominiums &
42 Town Homes
8.73 acres
PRIVATE TRACK NO. 6
8.82 acres
OPEN SPACE
TRACK NO. 3
13.89 acres
OPEN SPACE
TRACK NO. 5
2.82 acres
BAKER PARCEL (NOT A PART)
2.56 acres
RESIDENTIAL - 2
202 Condominiums
8.84 acres
OPEN SPACE
TRACK NO. 4
10.66 acres

# OPEN SPACE

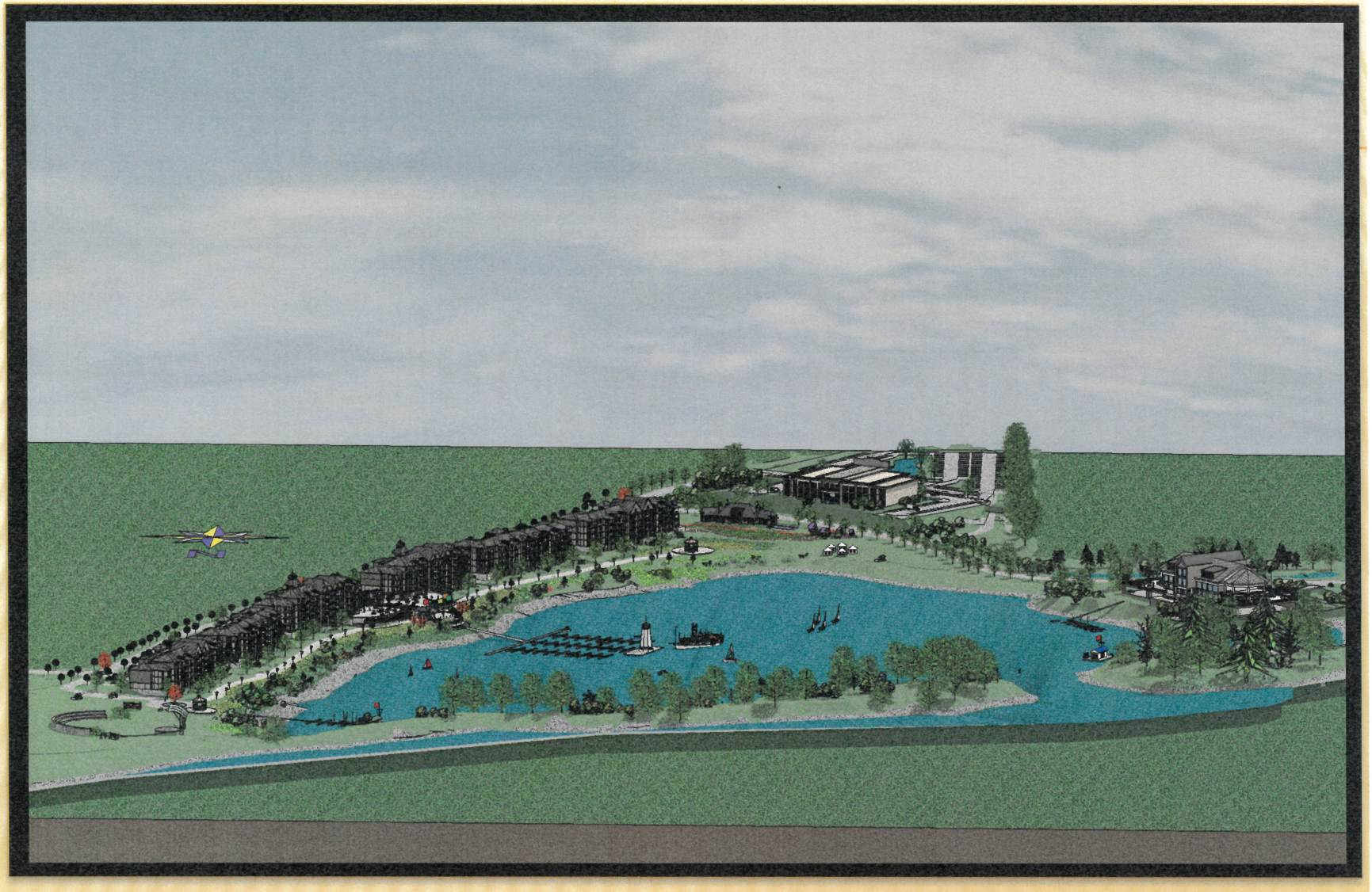

SHERIFF DOCK
OFFICE 58,400 SF - (2)RESTAURANTS
FOR SALE
NATURE PRESERVE
80,000 SF MEDICAL OFFICE
FOR SALE
RECREATION FACILITY
PLAZA & ESPLANADE
MARINA & RESTAURANTS
224 WATERFRONT
CONDOMINIUMS
AMPHITHEATER
WATER SPORTS CENTER
The Cove
WATERFRONT MASTER PLANNED MIXED USE VILLAGE


WATERFRONT CONDOMINIUMS
LIVE WORK PLAY
CLUB HOUSE - REC CENTER
THE PLAZA - BISTRO - COFFEE
FOR SALE
OFFICE - RESTAURANTS
FOR SALE
MEDICAL CENTER
THE MARINA - ESPLANADE
ON THE WATER
BY THE WATER
IN THE WATER
The Lifestyle


WATER TAXI
WATER SPORTS CENTER
AMPHITHEATER
VIEW POINTS & TRAILS
PUBLIC USES



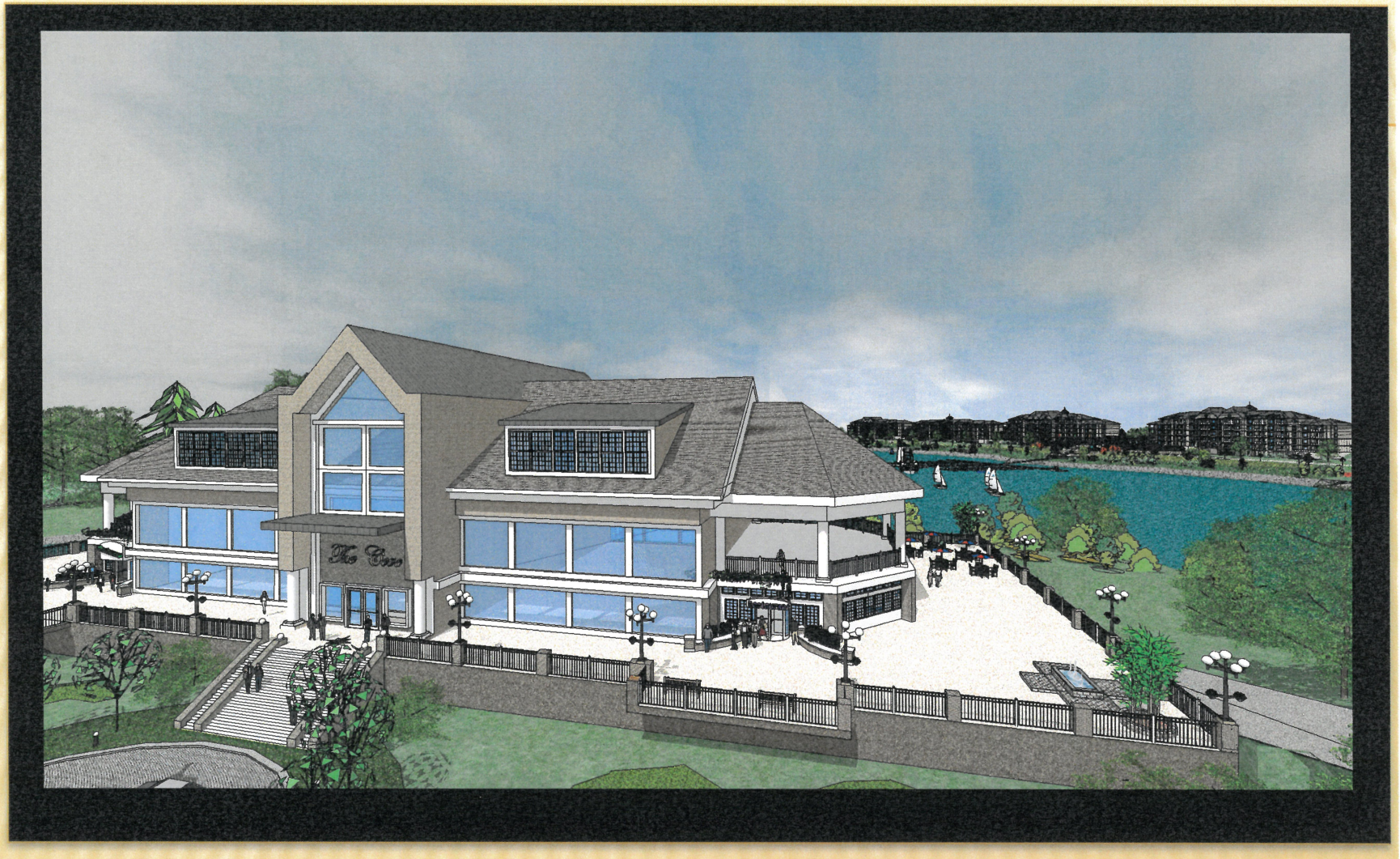

IMAGES OF THE COVE



3 D – Master Plan



Office Complex - Two Restaurants

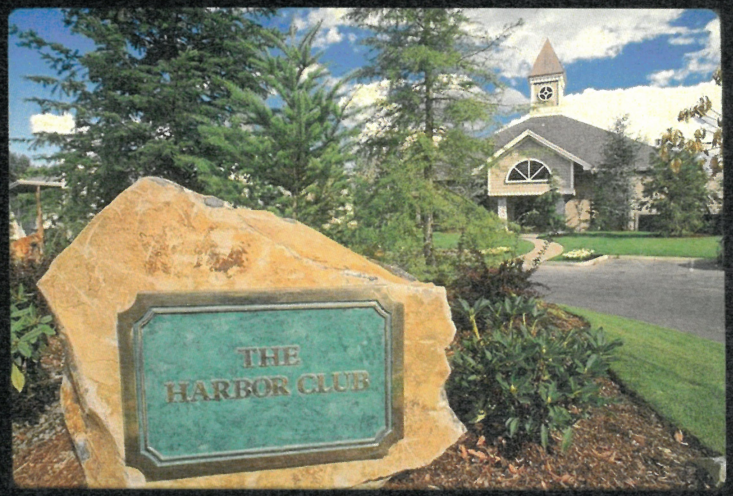


Mixed Use Building – Two Restaurants

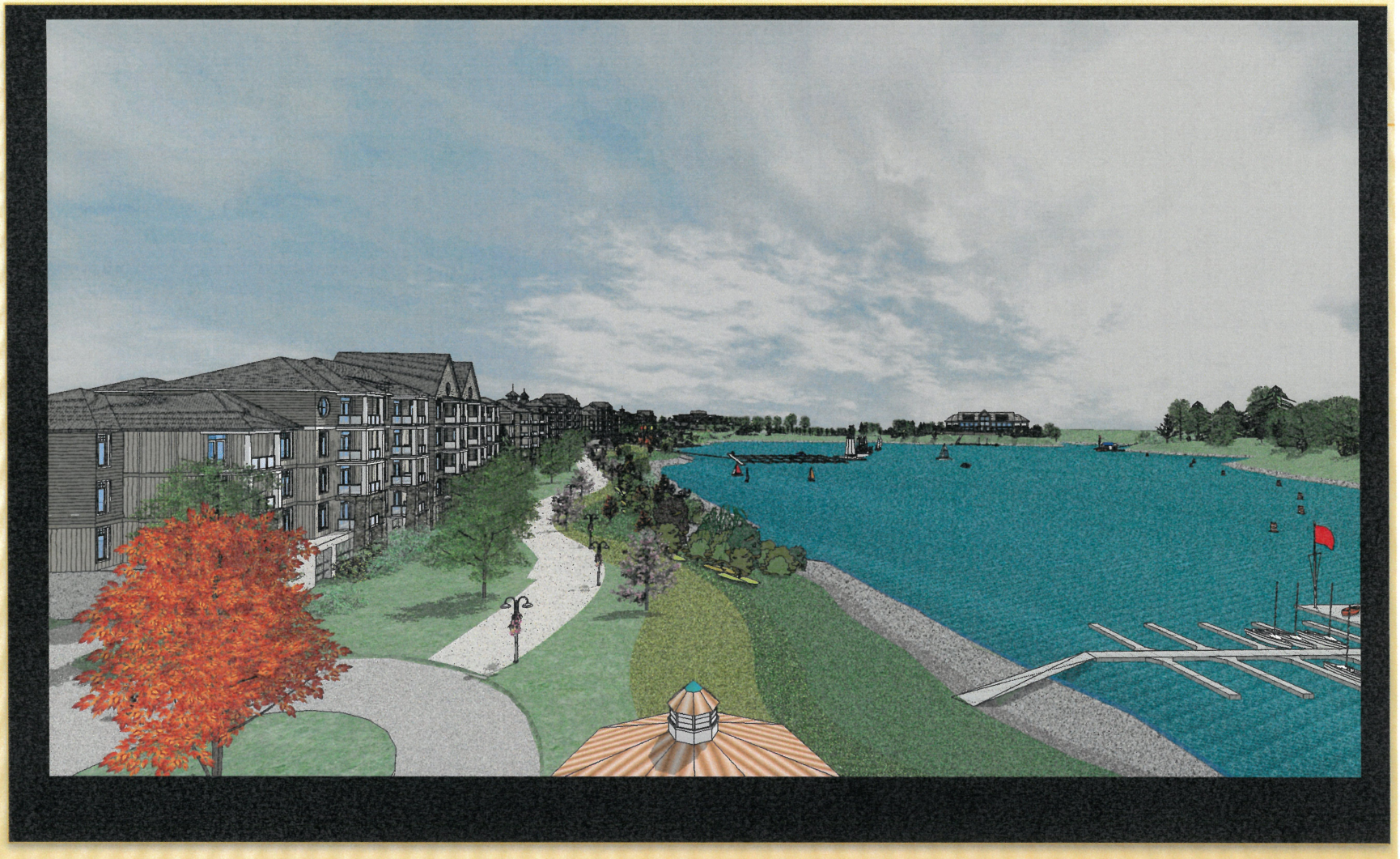




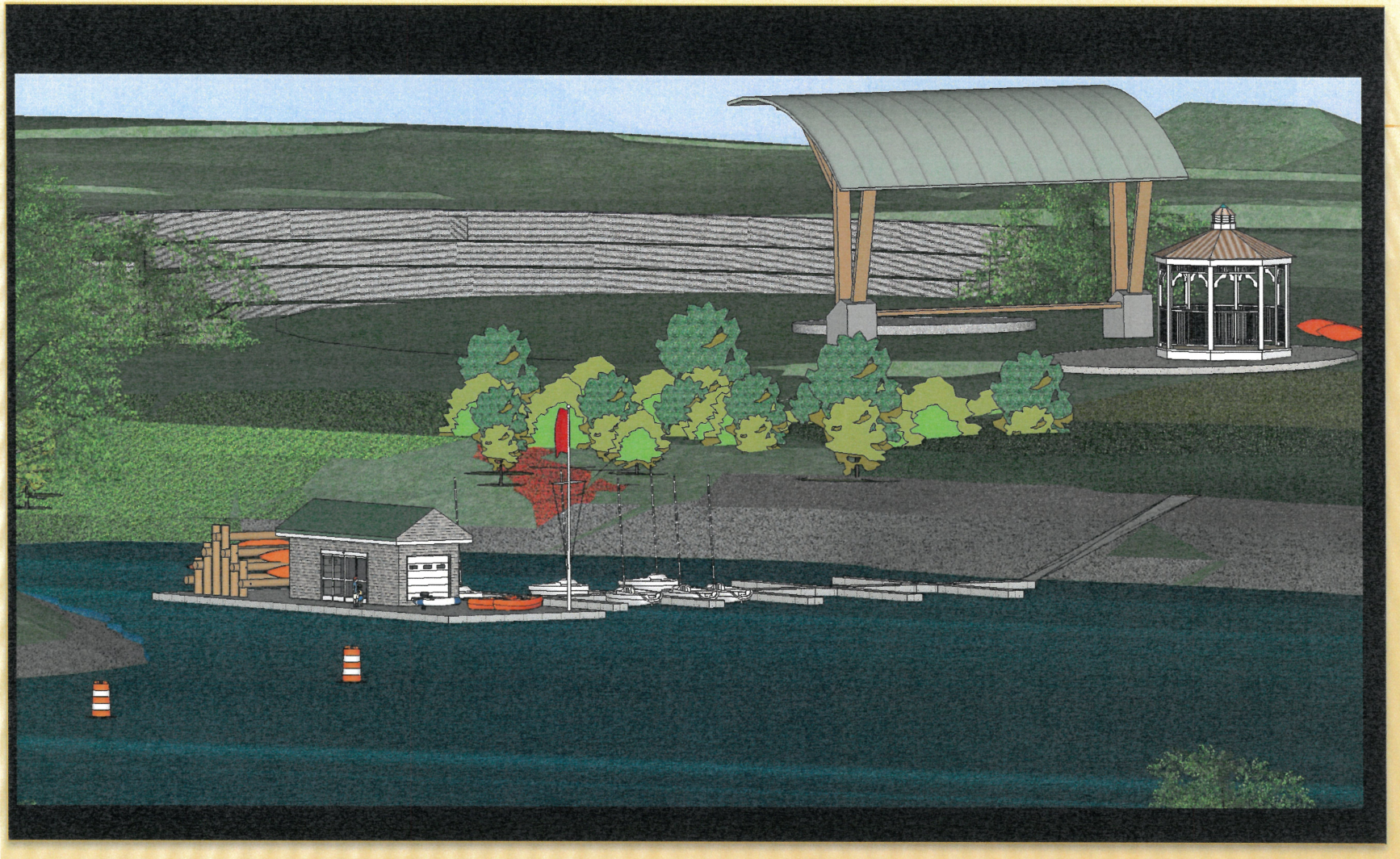



# Waterfront Restaurants



North end of the Esplanade



Water Sports Center - Amphitheater

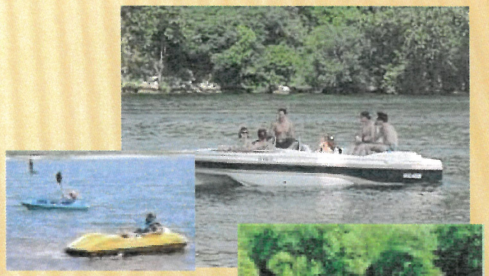


BOAT HOUSE AND SPORTS CENTER





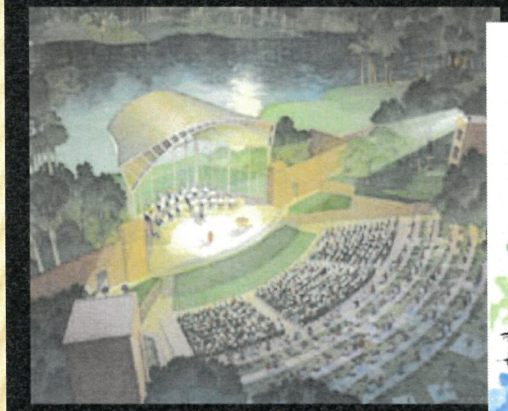






Water Sports Center

# The Cove AMPHITHEATER







## 2008 SUMMER CONCERT SERIES



BRENDA RUSSEL



MARC BROUSSARD



LOS LOBOS



TONY SCODWELL

DESIGNED TO PRESERVE AND ENHANCE THE NATURAL SETTING

A DONORS WALL COULD BE DESIGNED TO ENCOURAGE PRIVATE CAPITALIZATION



Entry Elevation - Waterfront Condominiums



Entry Elevation - Waterfront Condominiums



Water Feature at Entry of  Condominiums



The Esplanade Plaza



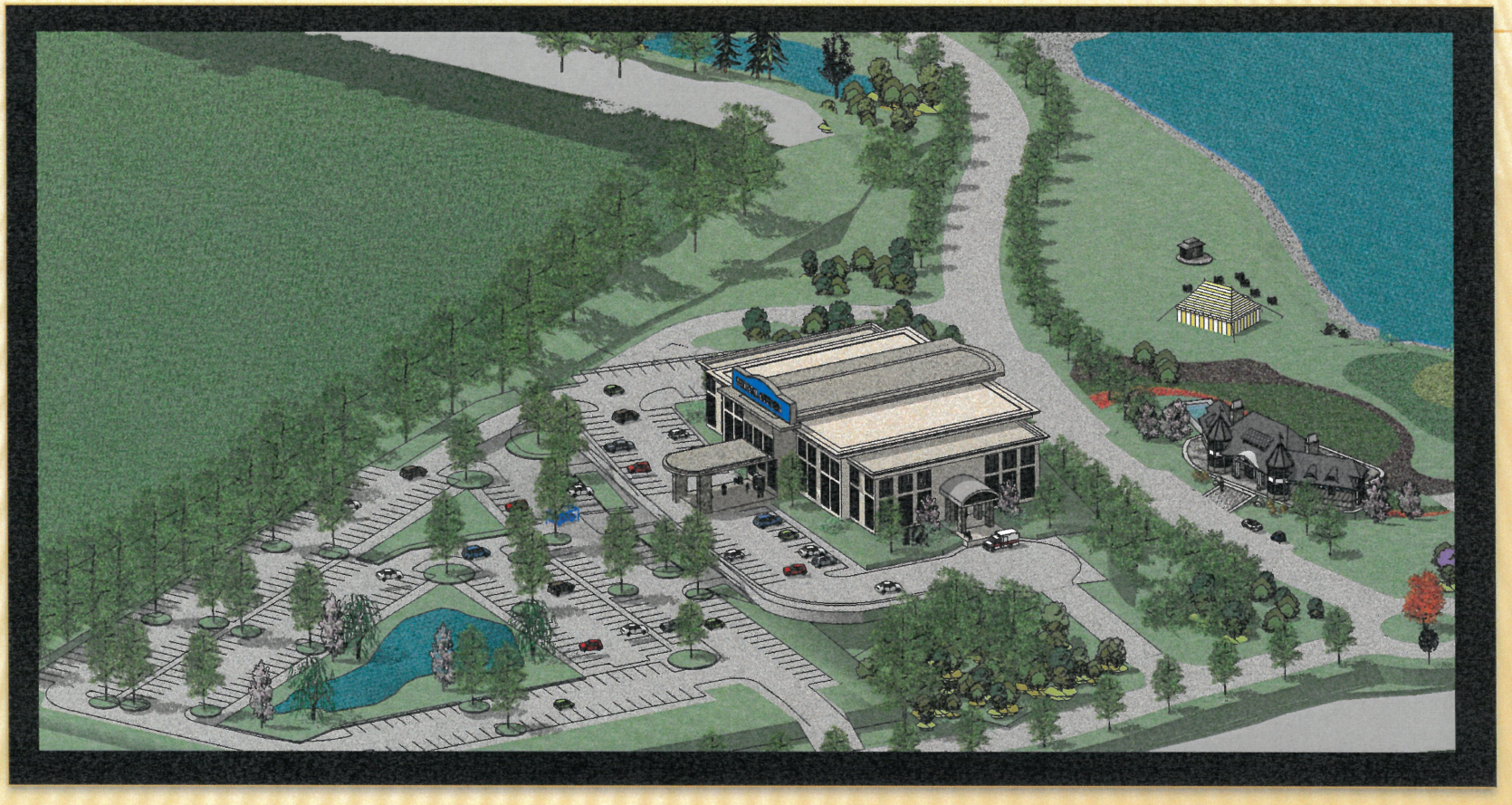
The Plaza



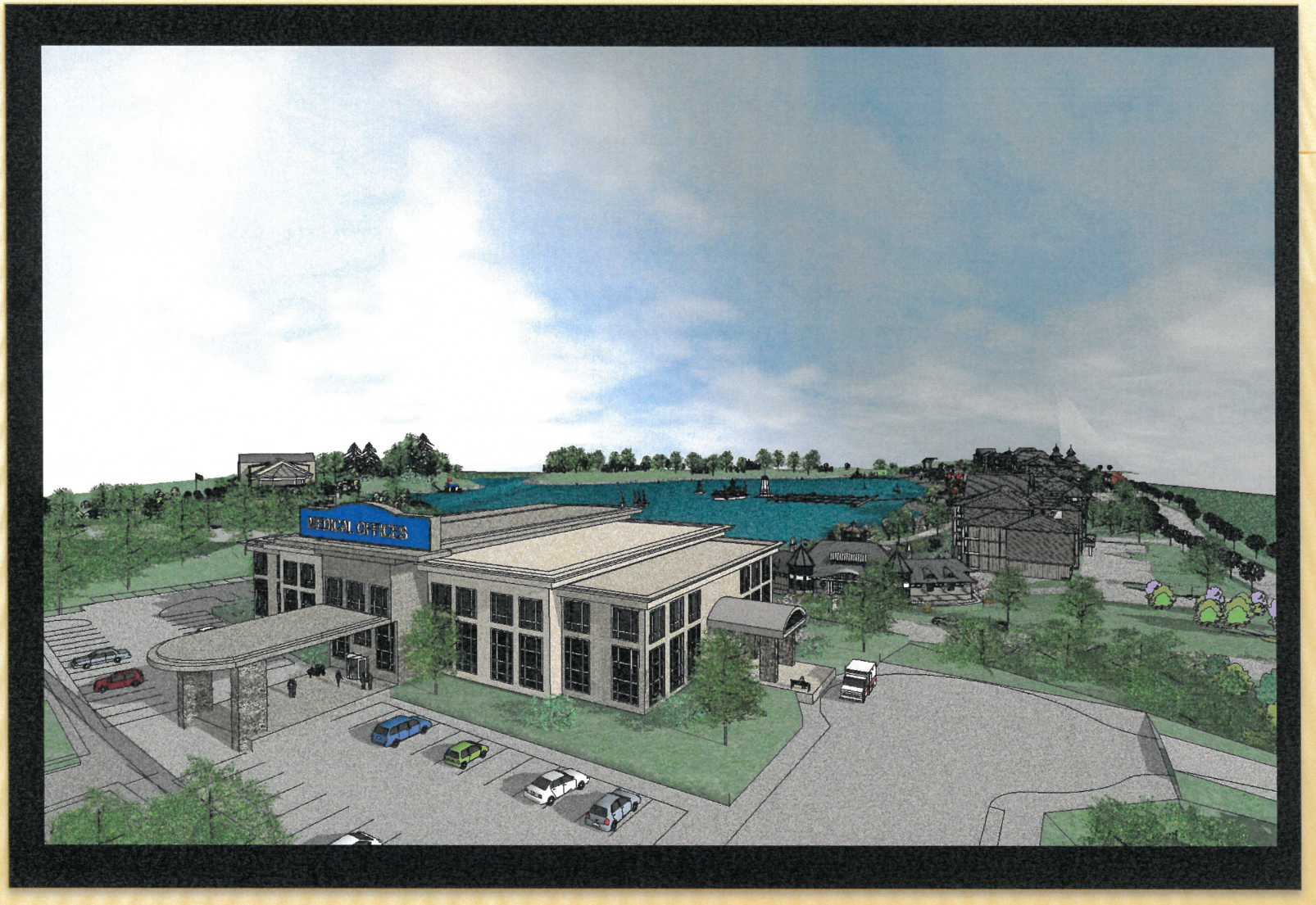
The Event Center – Recreation Building



Freeway Access & Visibility



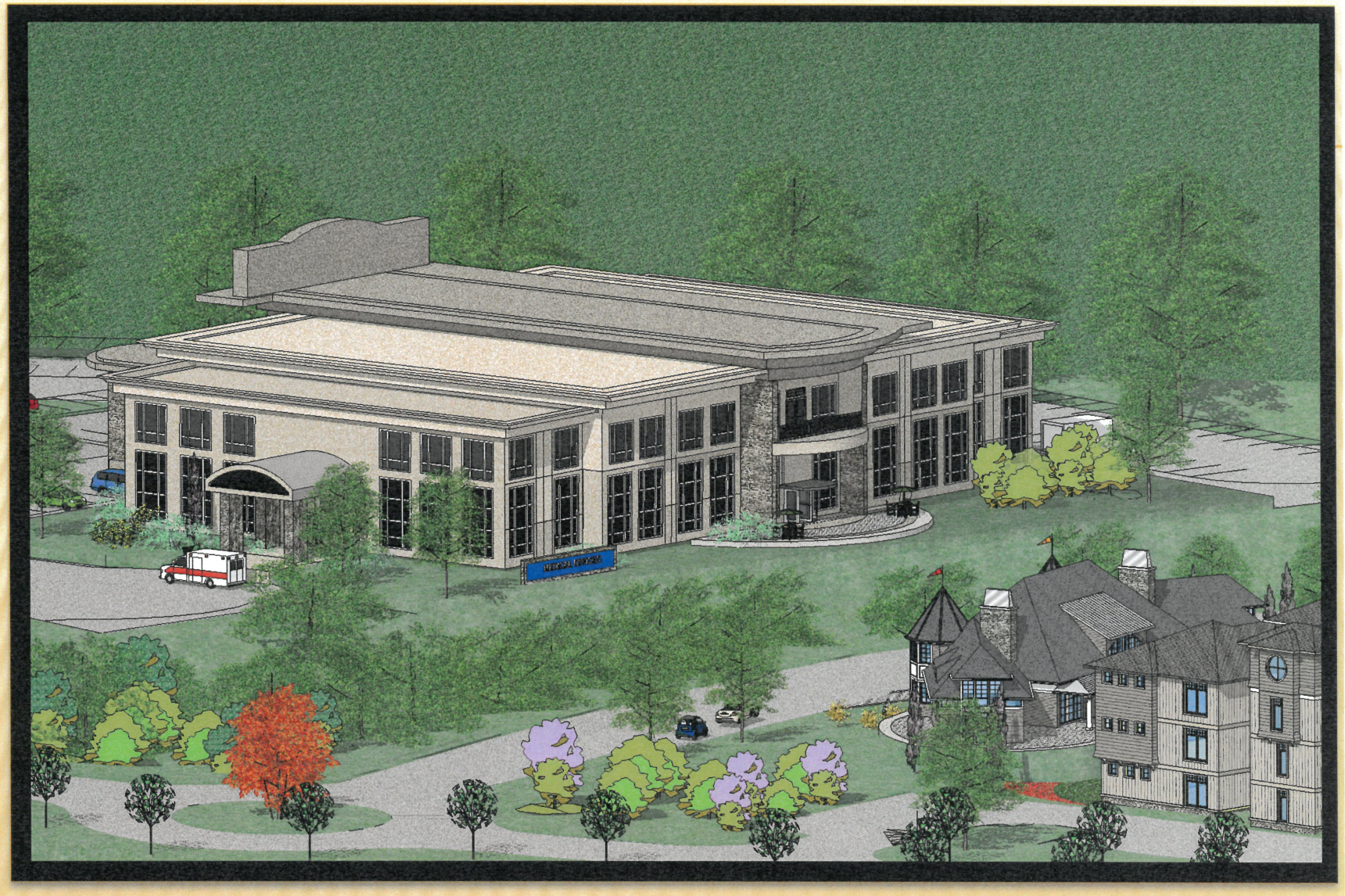
Medical Center - Rear Elevation



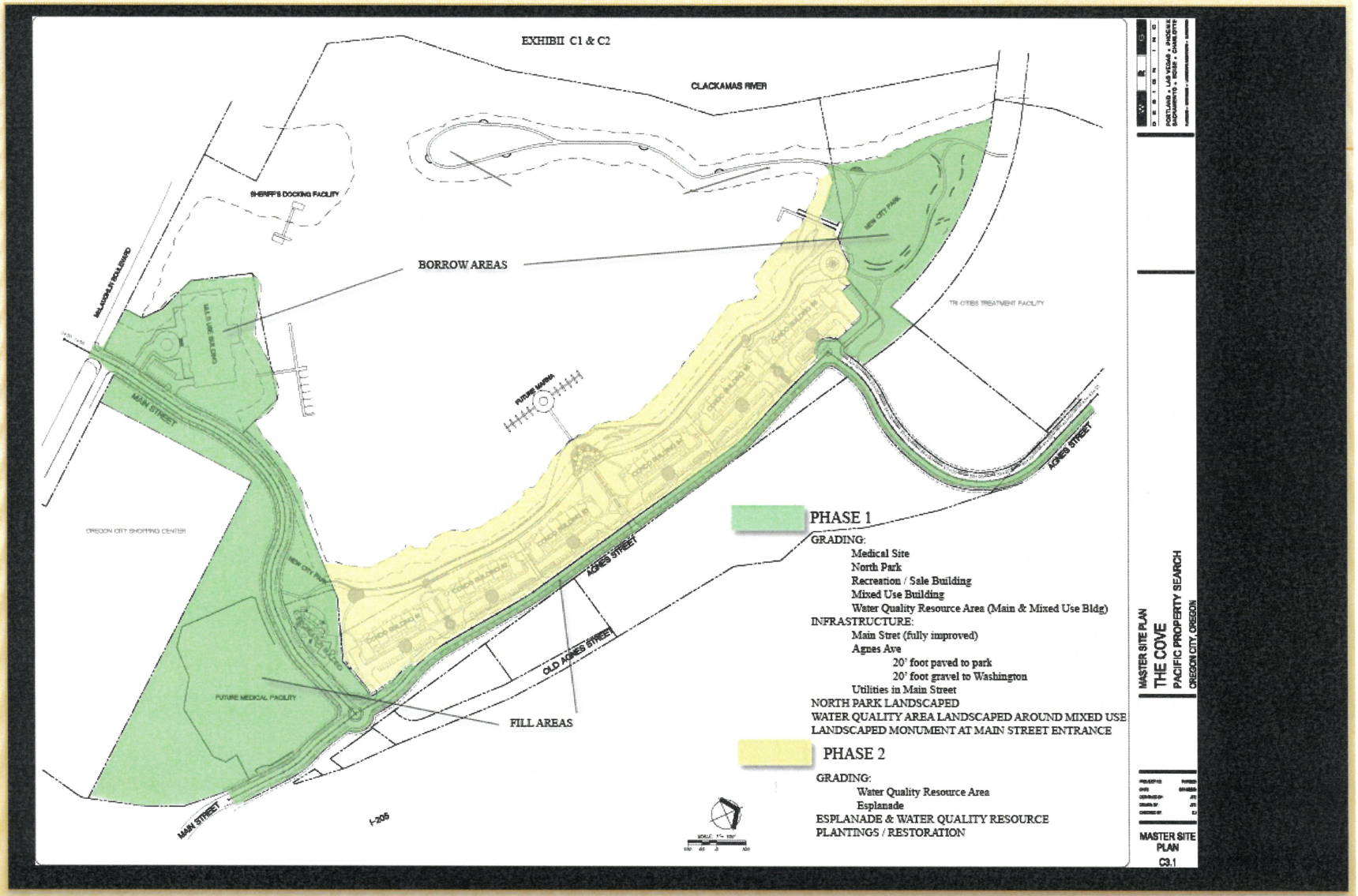

Medical Office Center - Back Elevation



Medical Office – SW Elevation



Medical Office – SW Elevation


EXHIBII C1 & C2
CLACKAMAS RIVER
SHERIFF'S DOCKING FACILITY
MILWAUKIE BOULEVARD
BORROW AREAS
MAIN STREET
OREGON CITY SHOPPING CENTER
FUTURE MEDICAL FACILITY
FUTURE MARINA
TRI CITIES TREATMENT FACILITY
AGNES STREET
OLD AGNES STREET
FILL AREAS
I-205
PHASE 1
GRADING:
Medical Site
North Park
Recreation / Sale Building
Mixed Use Building
Water Quality Resource Area (Main & Mixed Use Bldg)
INFRASTRUCTURE:
Main Stret (fully improved)
Agnes Ave
20' foot paved to park
20' foot gravel to Washington
Utilities in Main Street
NORTH PARK LANDSCAPED
WATER QUALITY AREA LANDSCAPED AROUND MIXED USE
LANDSCAPED MONUMENT AT MAIN STREET ENTRANCE
PHASE 2
GRADING:
Water Quality Resource Area
Esplanade
ESPLANADE & WATER QUALITY RESOURCE
PLANTINGS / RESTORATION
MASTER SITE PLAN
THE COVE
PACIFIC PROPERTY SEARCH
OREGON CITY, OREGON
MASTER SITE PLAN
C3.1

PHASE 1 & 2

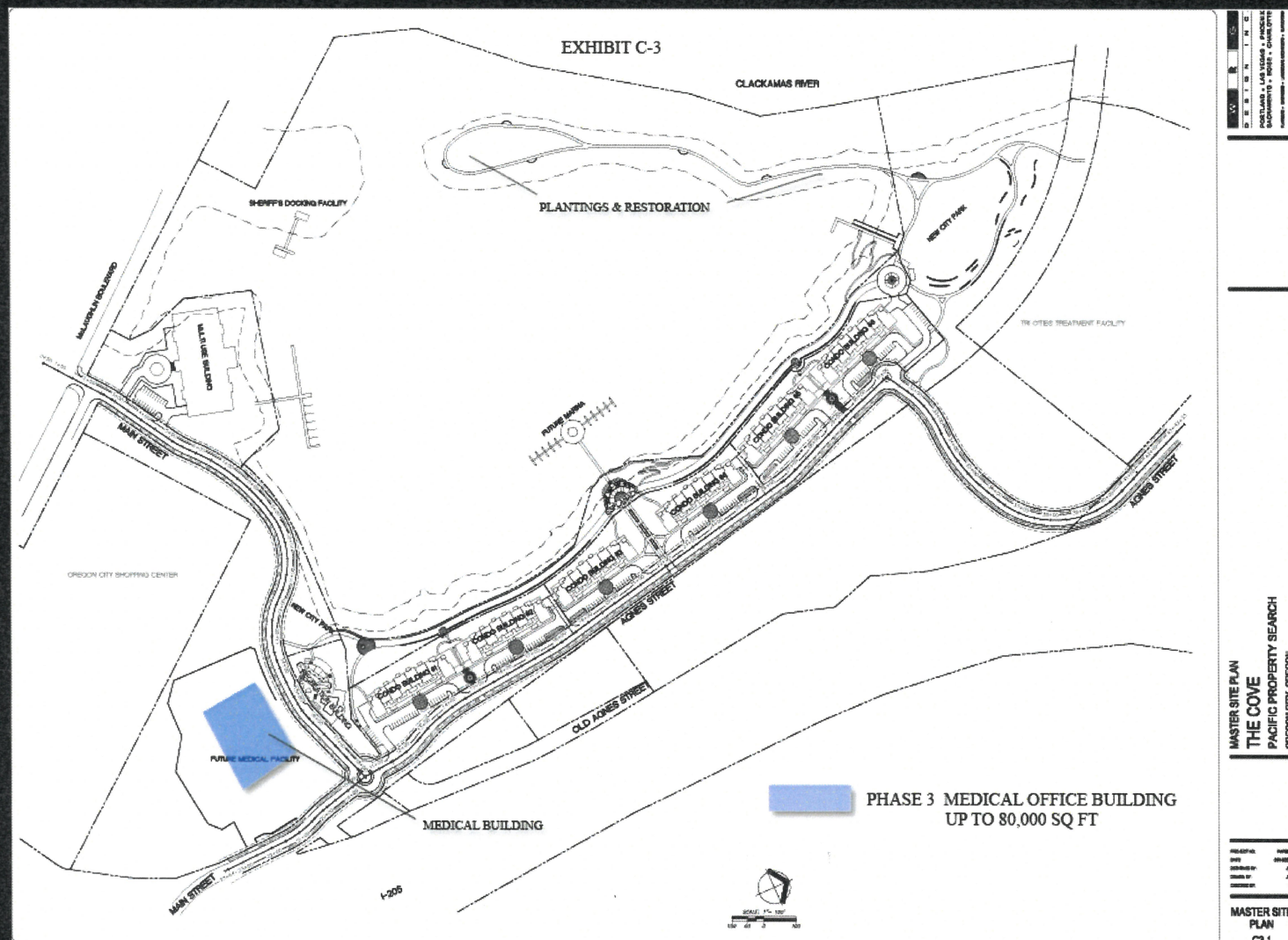
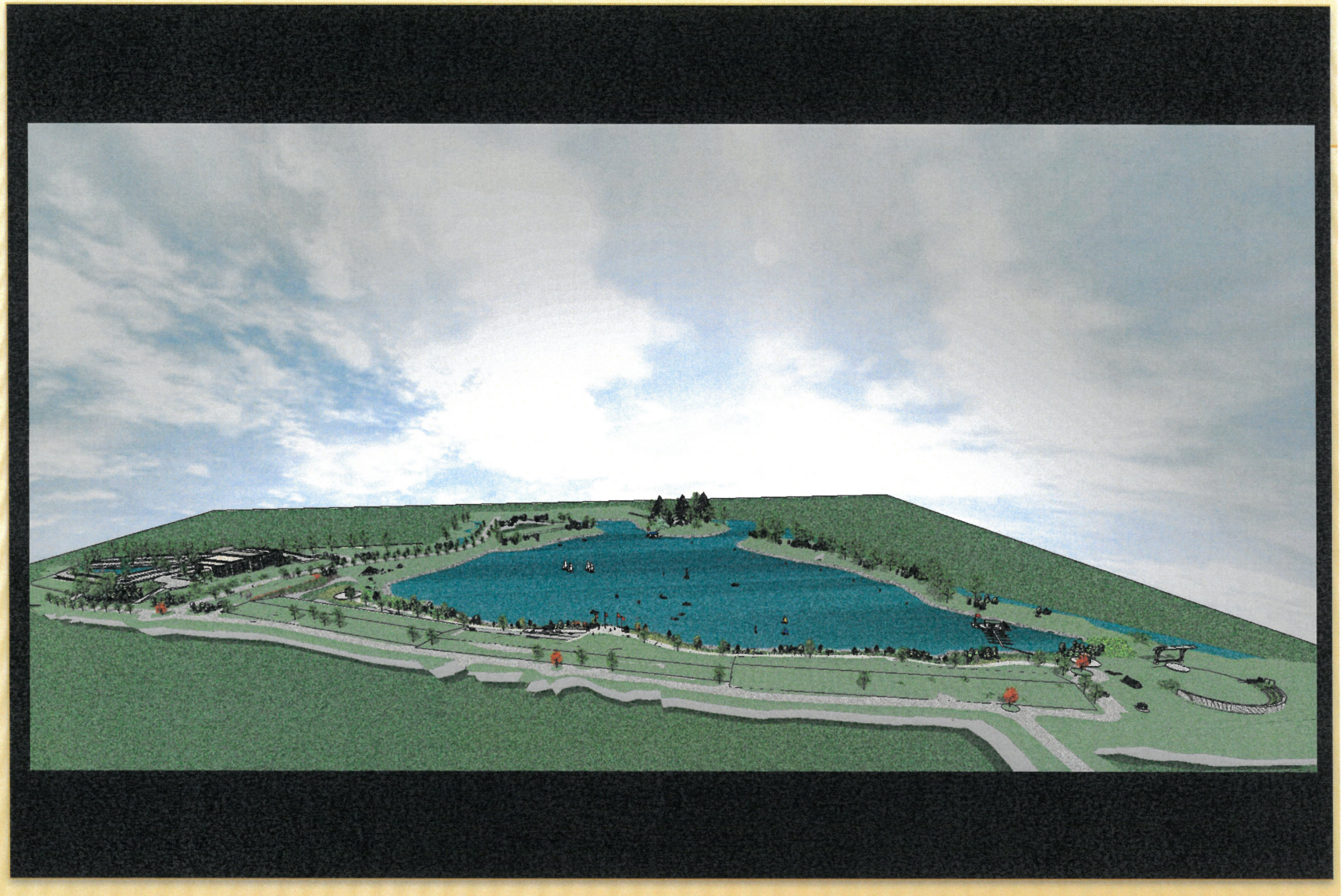


EXHIBIT C-3
CLACKAMAS RIVER
PLANTINGS & RESTORATION
SHERIFF'S DOCKING FACILITY
MULTI USE BUILDING
MAIN STREET
OREGON CITY SHOPPING CENTER
NEW CITY PARK
FUTURE MARINA
TRI CITIES TREATMENT FACILITY
AGNES STREET
OLD AGNES STREET
FUTURE MEDICAL FACILITY
MEDICAL BUILDING
I-205
PHASE 3 MEDICAL OFFICE BUILDING
UP TO 80,000 SQ FT
MASTER SITE PLAN
THE COVE
PACIFIC PROPERTY SEARCH
OREGON CITY, OREGON
MASTER SITE PLAN
C3.1

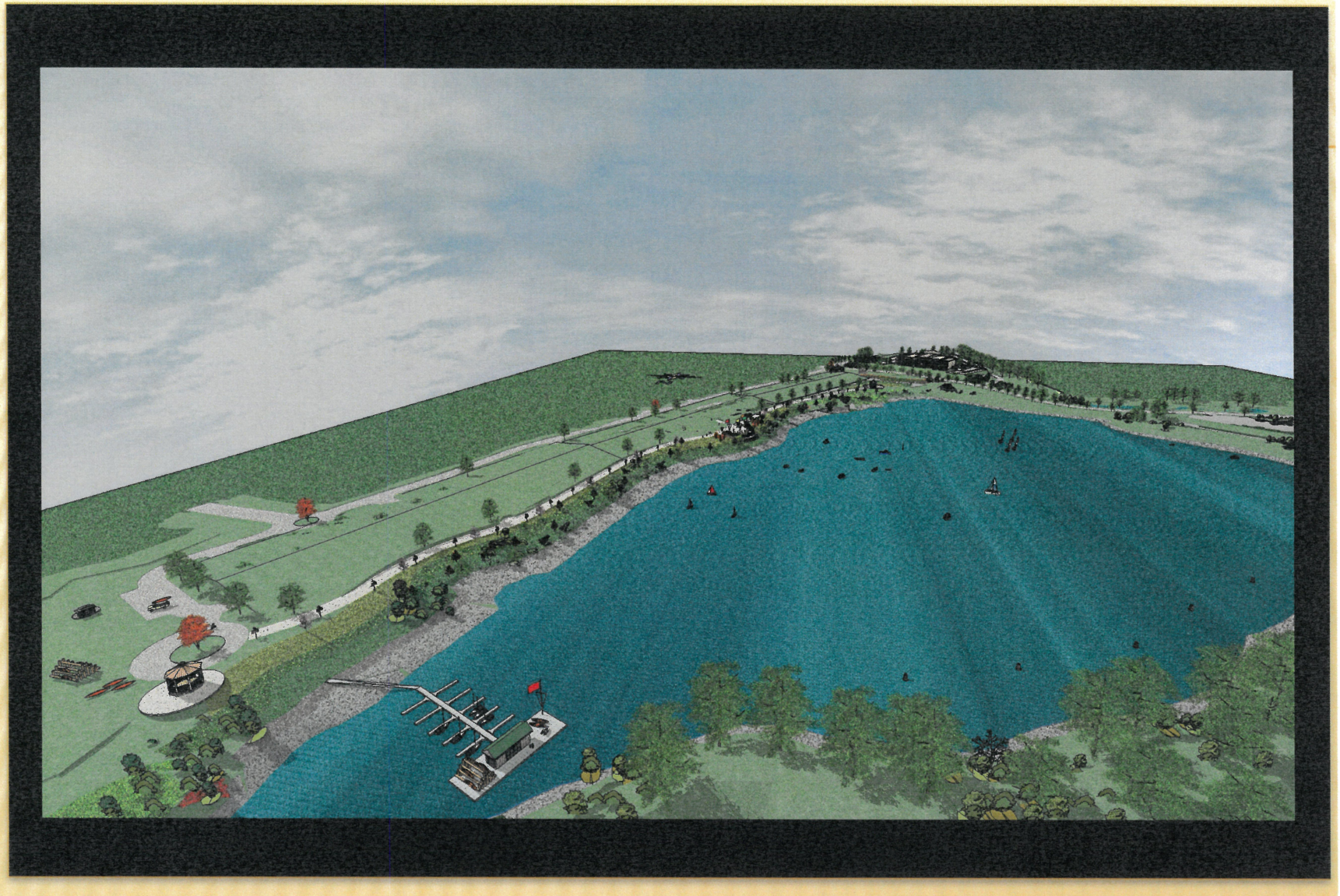
PHASE 3



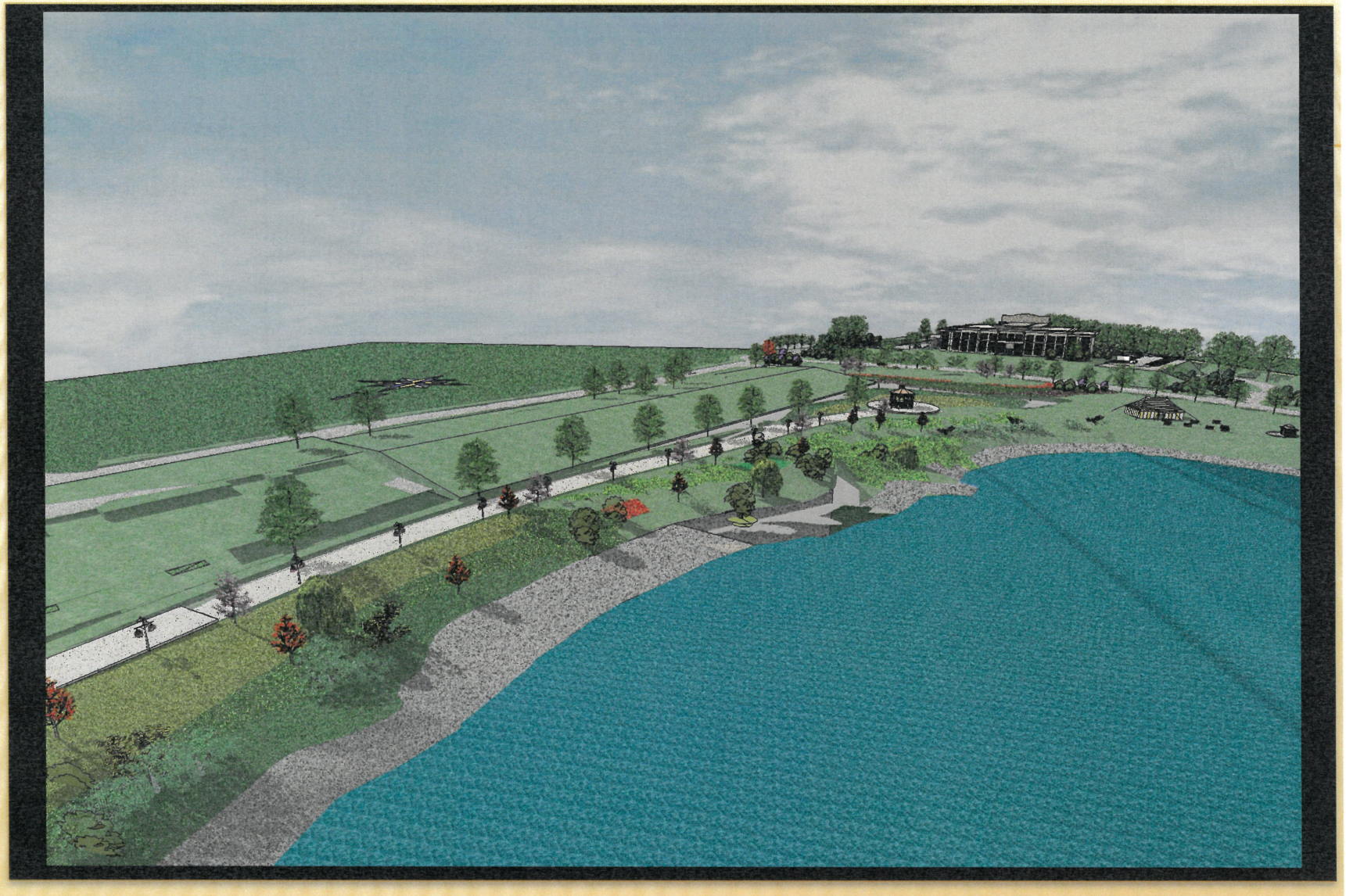

PHASE 1, 2 & 3 - INFRASTRUCTURE 1 & 2 - MEDICAL OFFICE – ESPLANADE – NO. PARK



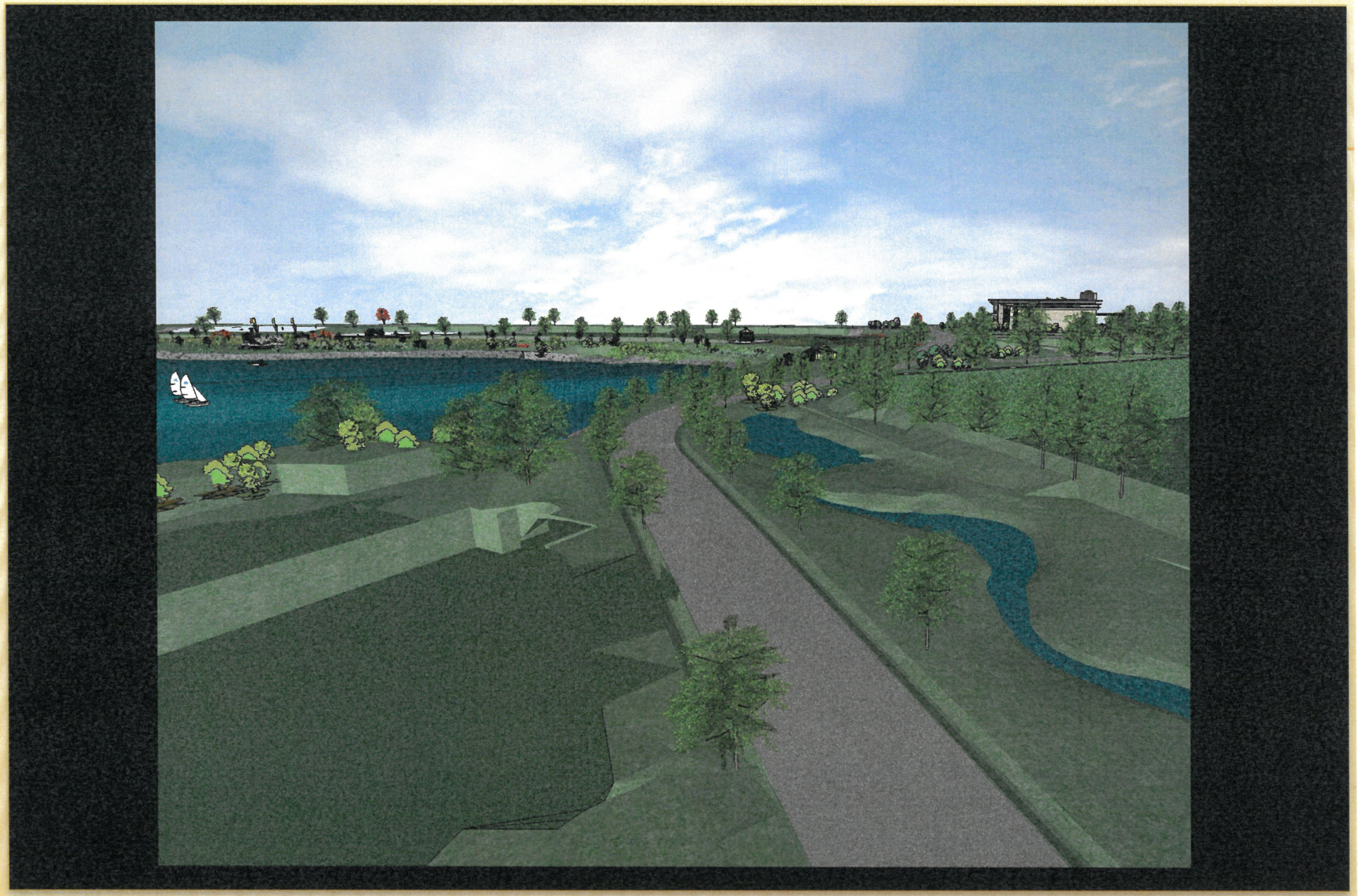
Site with PHASE 1, 2 & 3 COMPLETED
West View



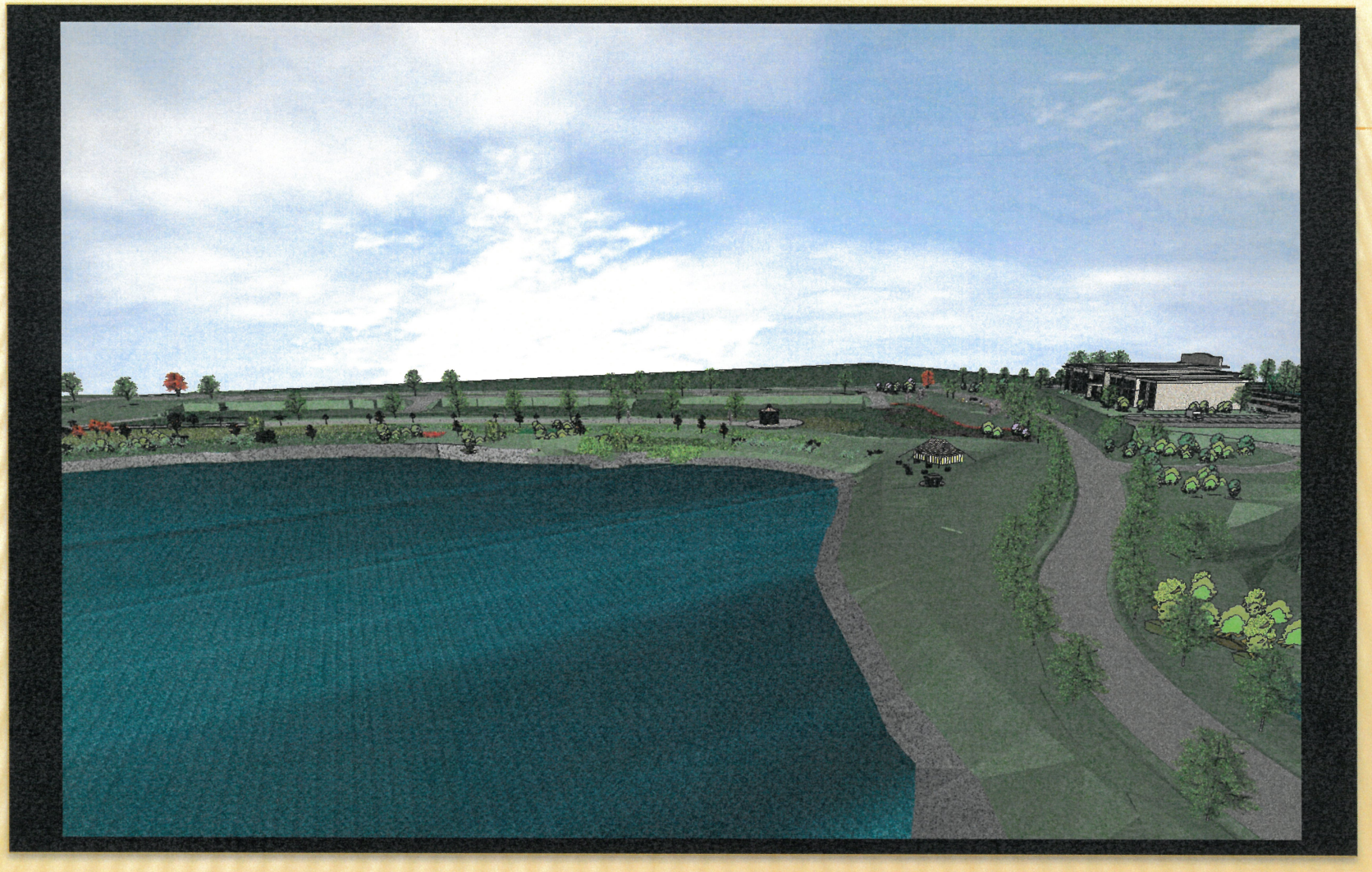
Site with PHASE 1, 2 & 3 COMPLETED
South View



Completed waterfront and Esplanade



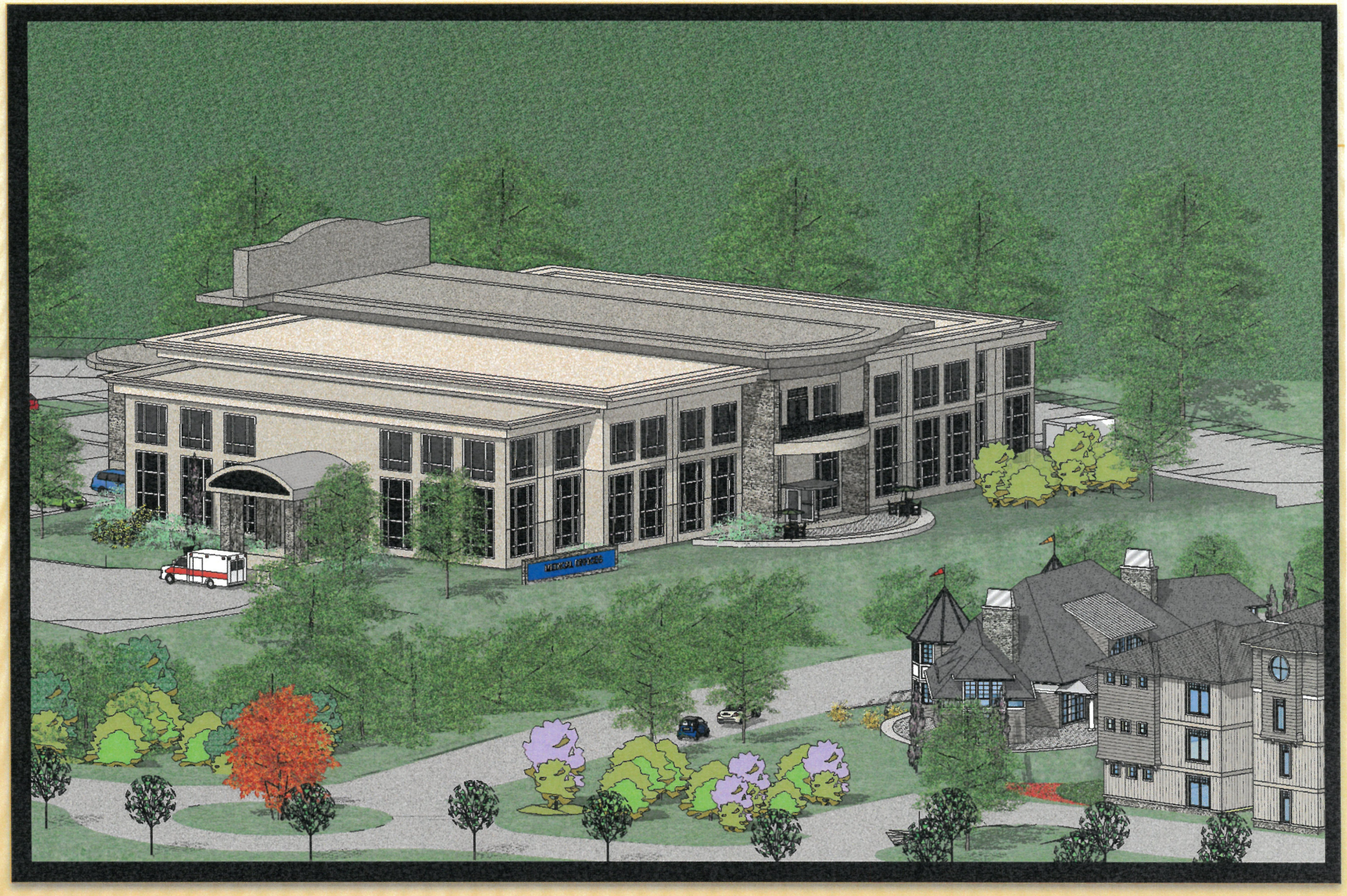
Entry Road – Main Street
West Viewing



Entry Road – Main Street
West Viewing



Medical Office – North Elevation



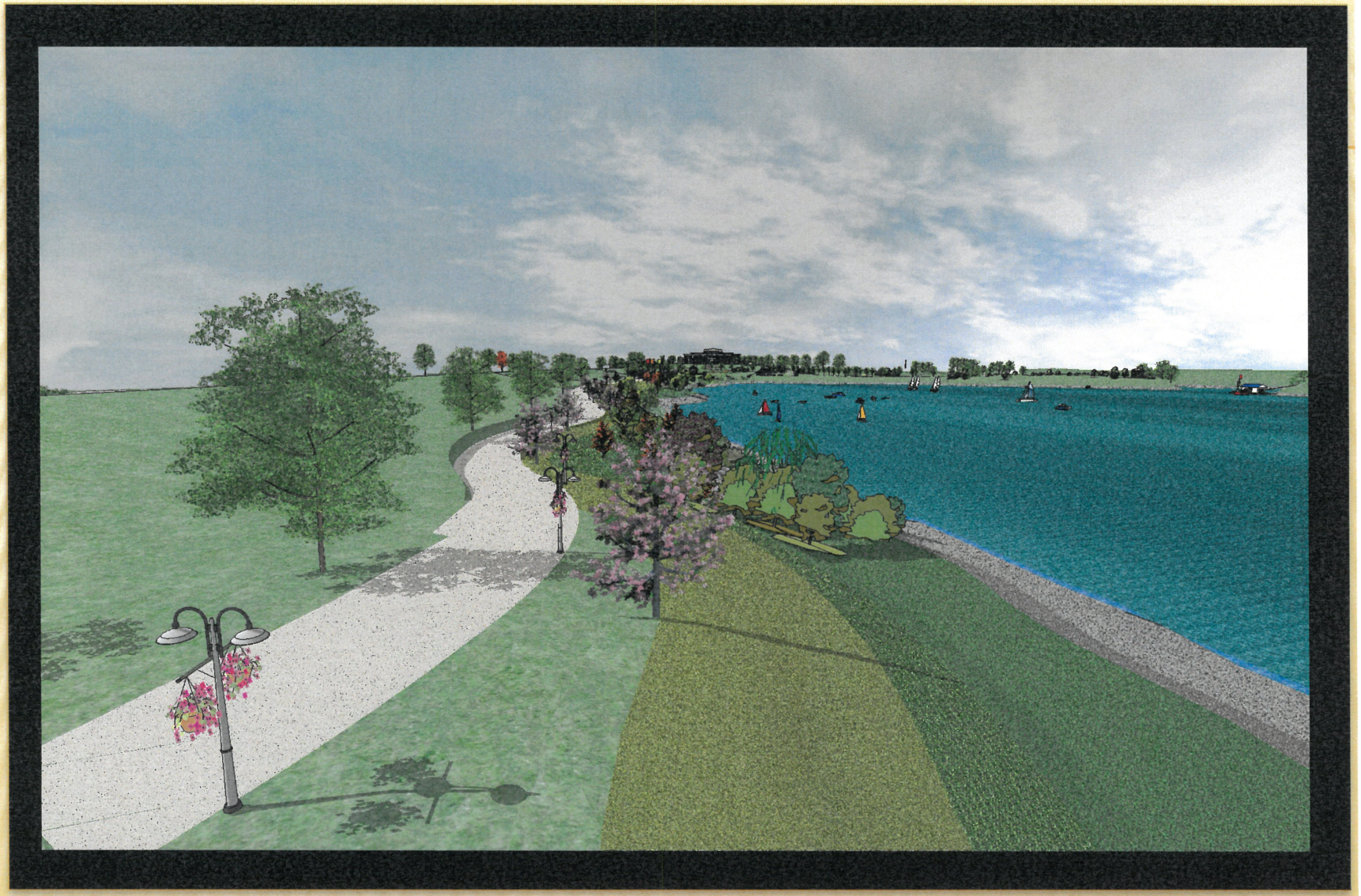
Medical Office – North Elevation



Intersection of Main & Agnes - South end of Esplanade
Viewing West



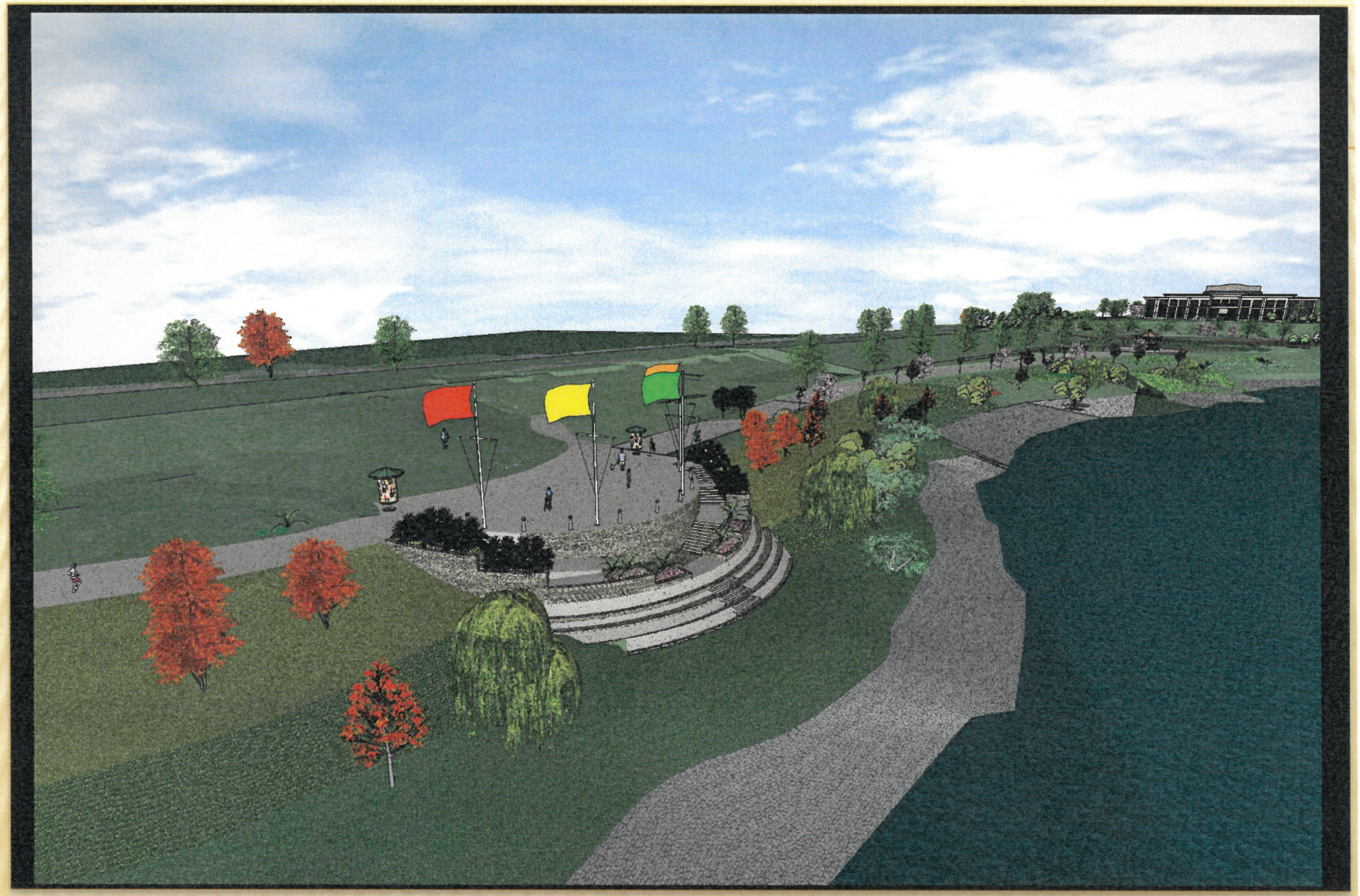
North end of Esplanade – Overlooking Amphitheater / Canoe Launch / Water Sports Center



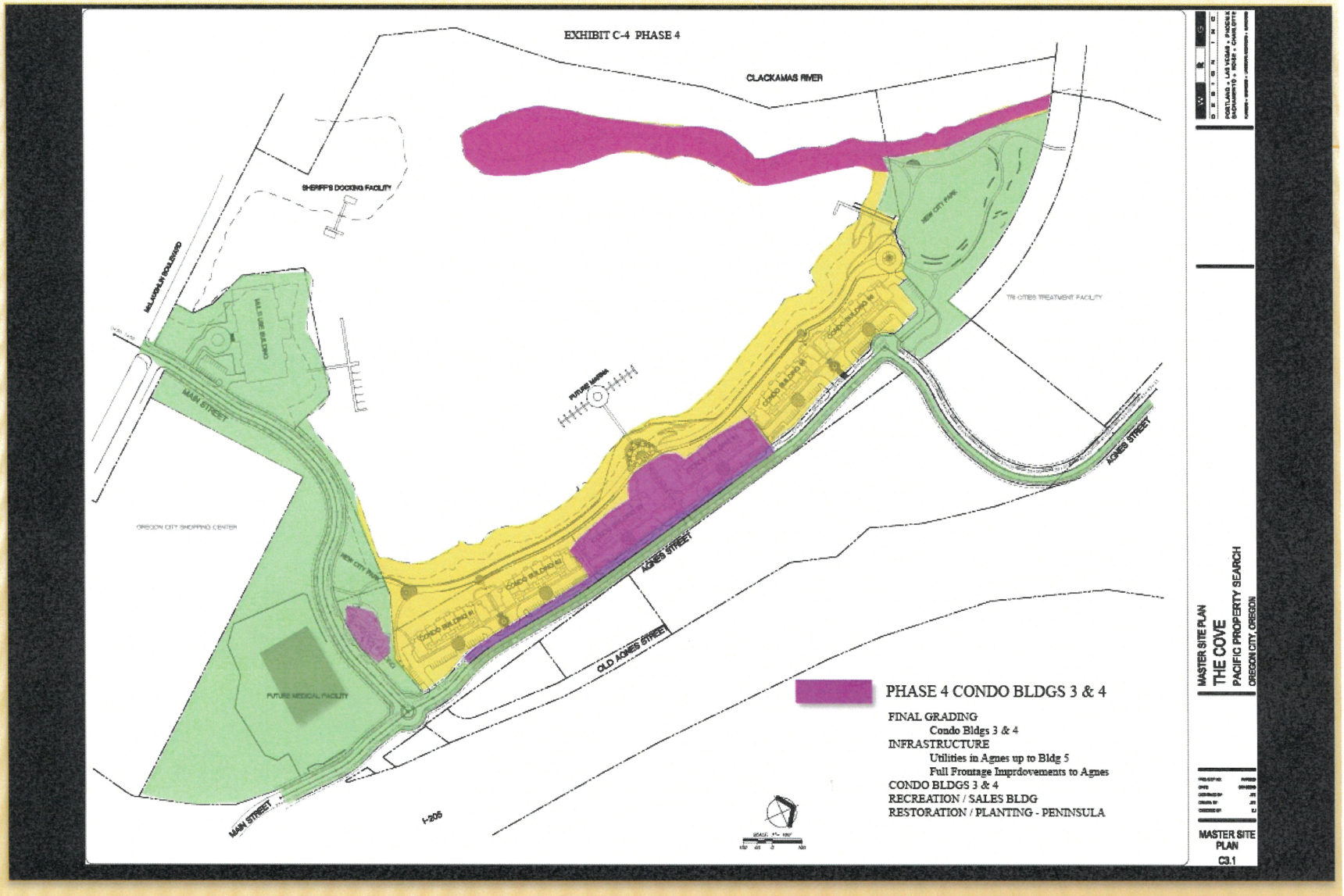
Esplanade Viewing South



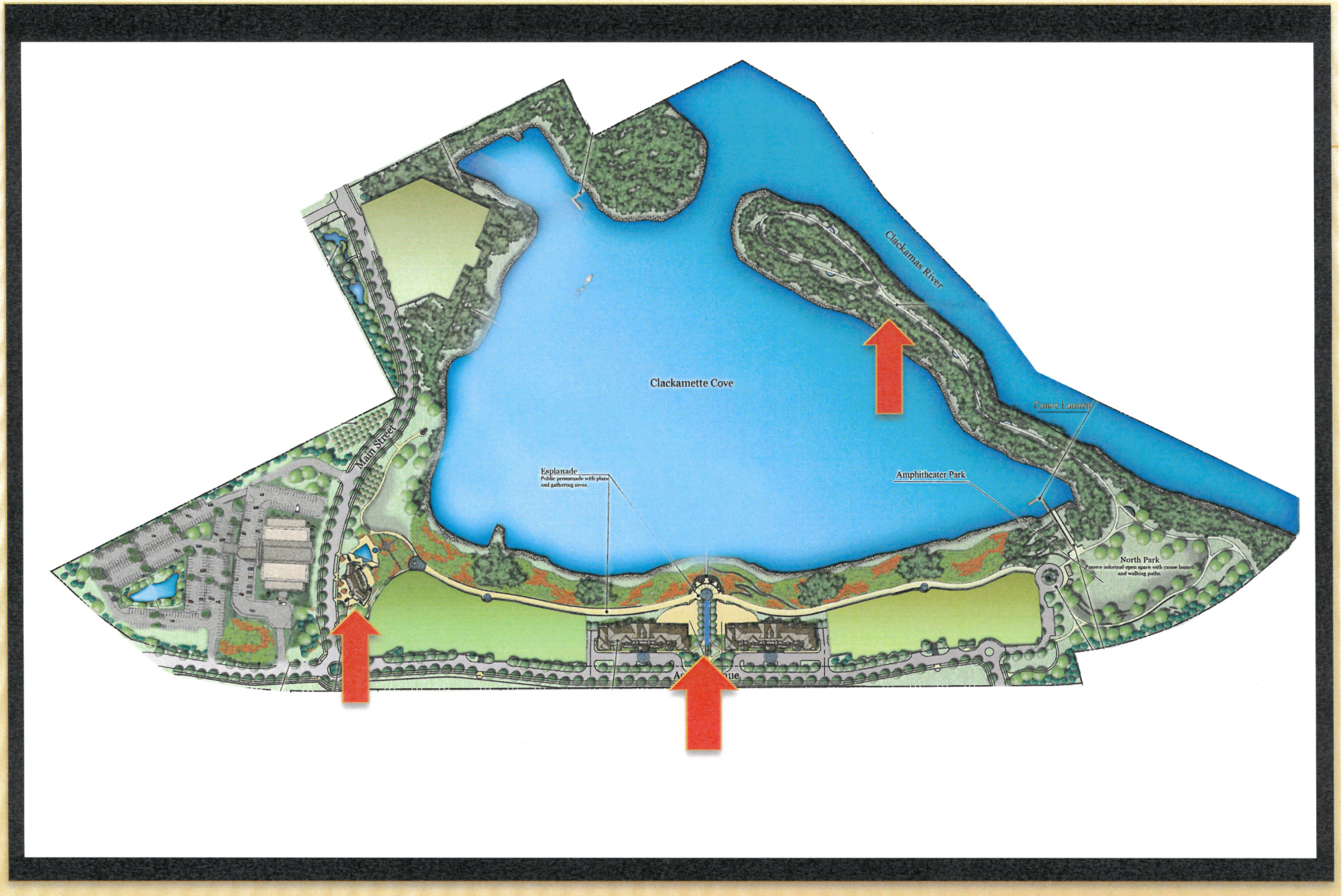
Center of Esplanade facing South



Center of Eplanade




PHASE 4 - CONDO BLDGS 3 & 4 - COMMUNITY CENTER / REC




Phase 4 – 2 Condominium Bldgs & Recreation Building – Peninsula Restroration



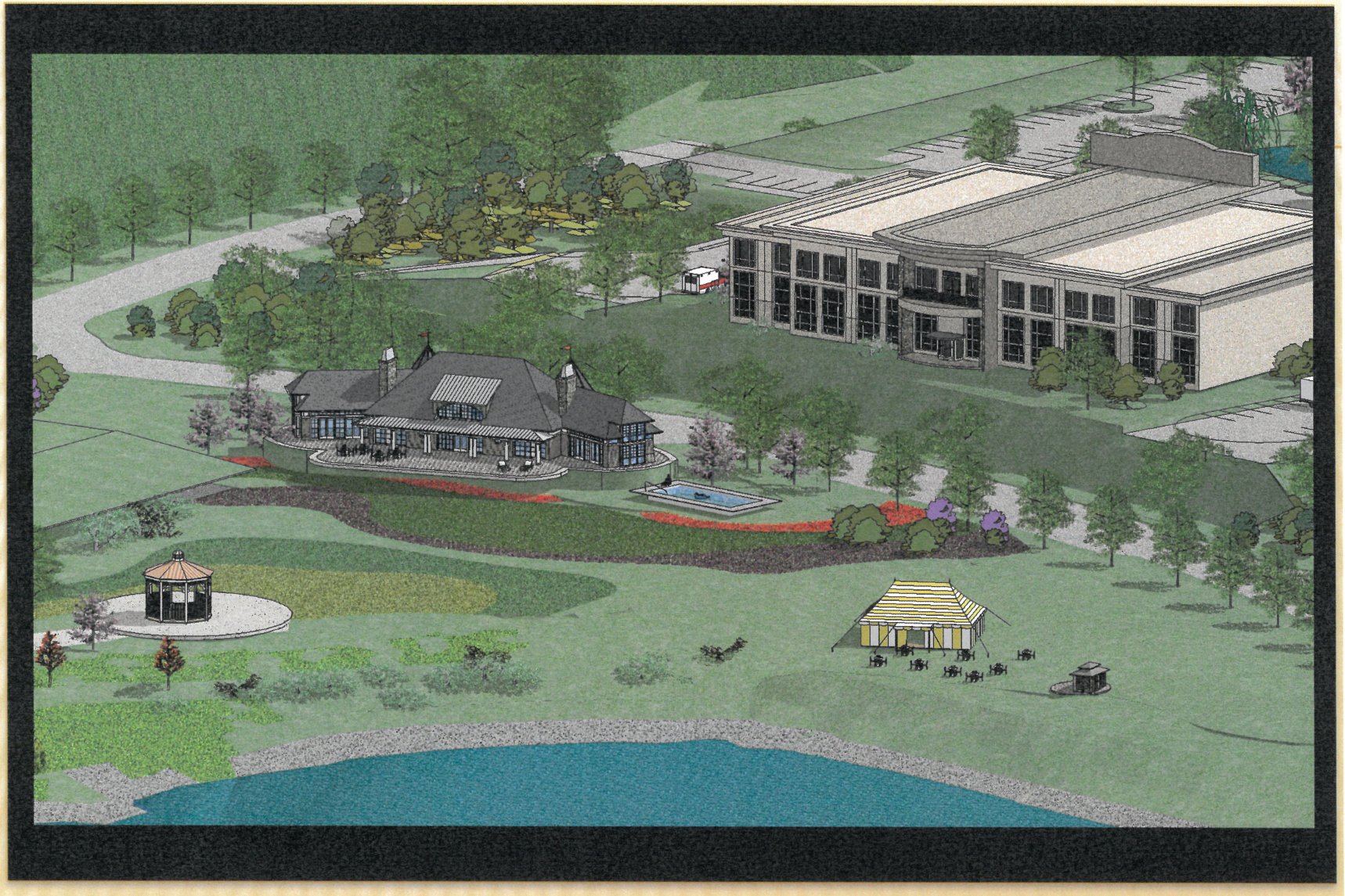
Phase 4 – 2 condominium Bldgs & Recreation Building



Two Condominium Bldgs – Central Plaza



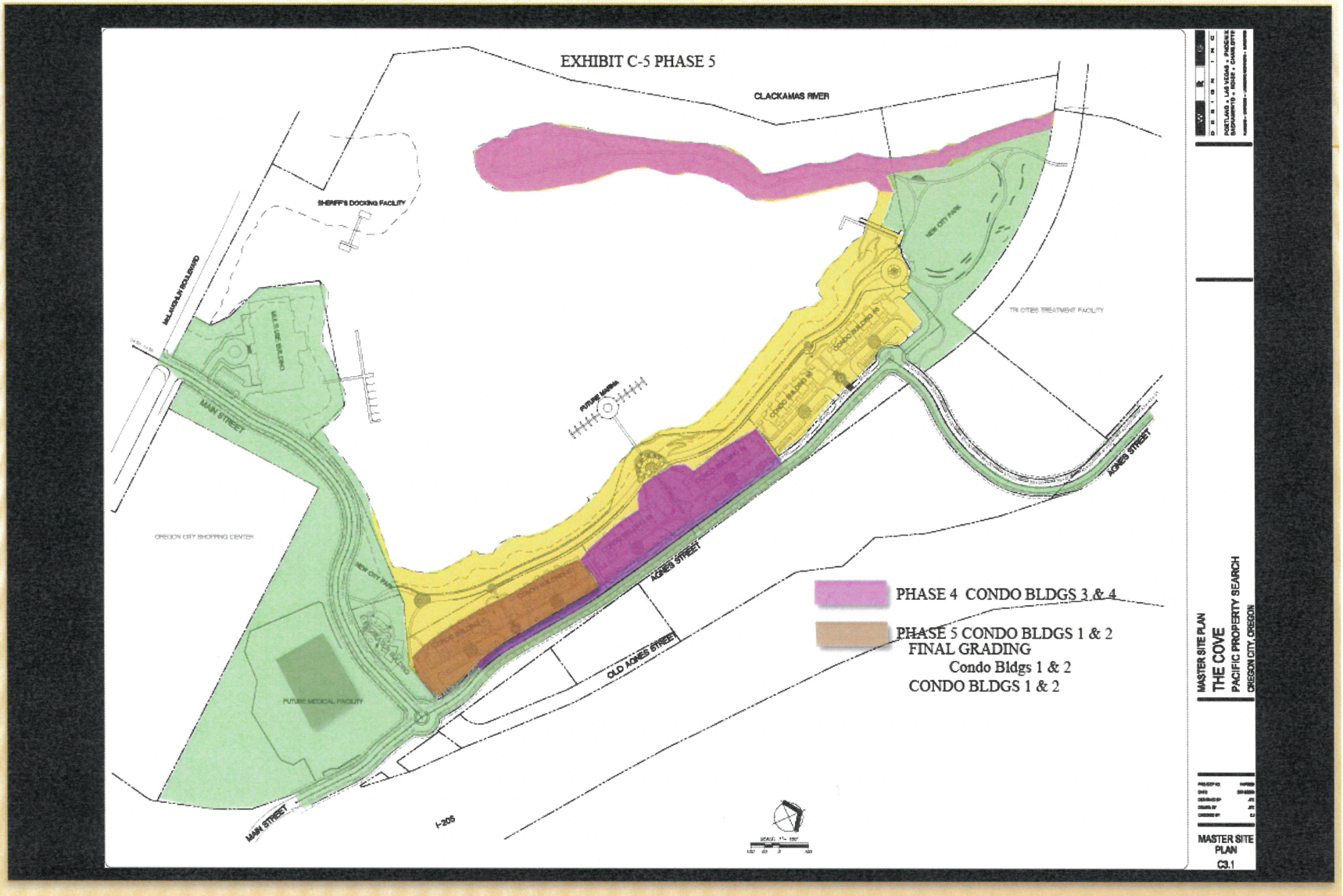
Two Condominium Bldgs – Central Plaza



Recreation Building – facing South



Recreation Building – facing North



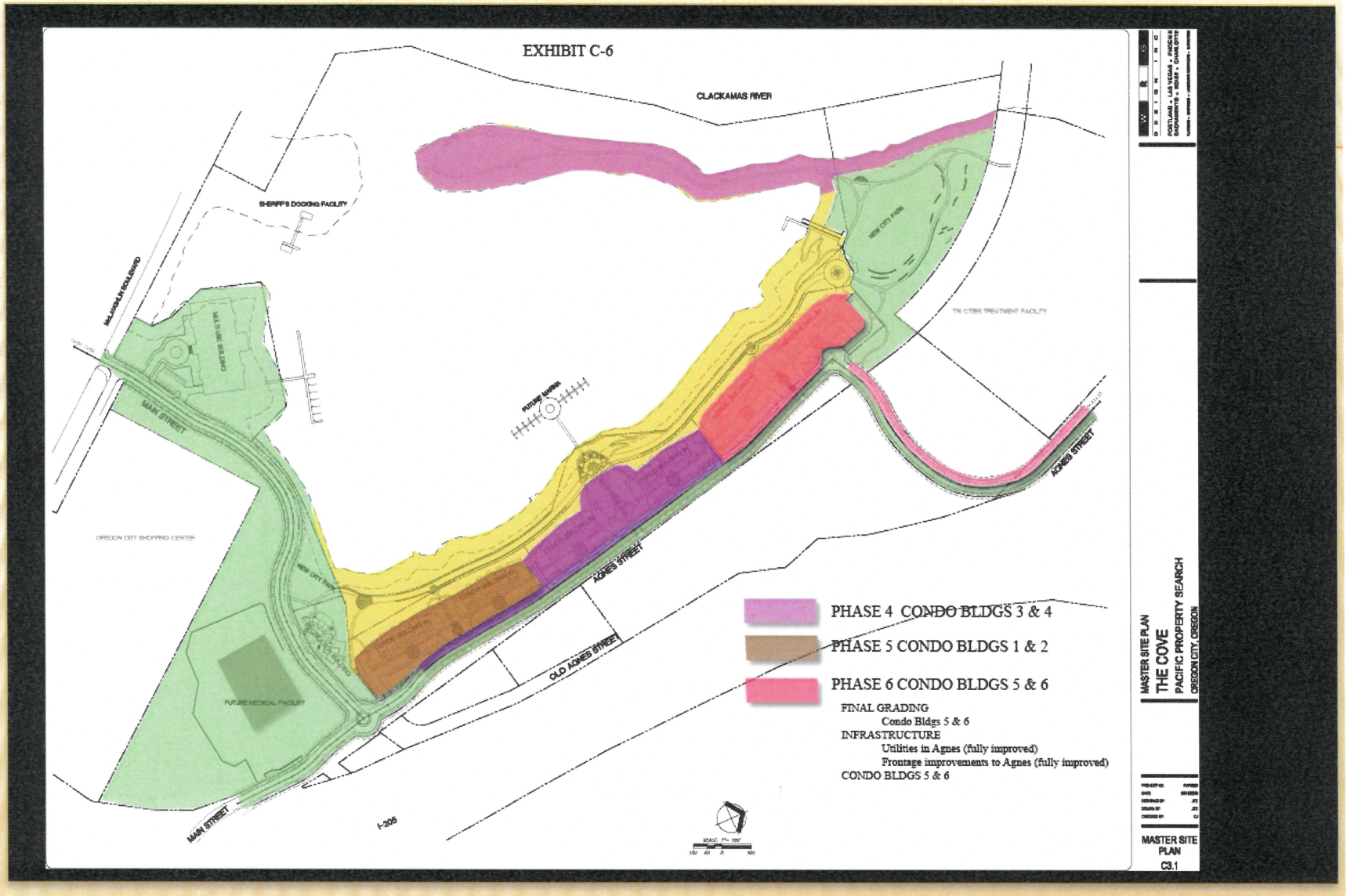

PHASE 5 – CONDOMINIUM BLDGS 1 & 2




Phase 5 – Two additional Condominium Buildings



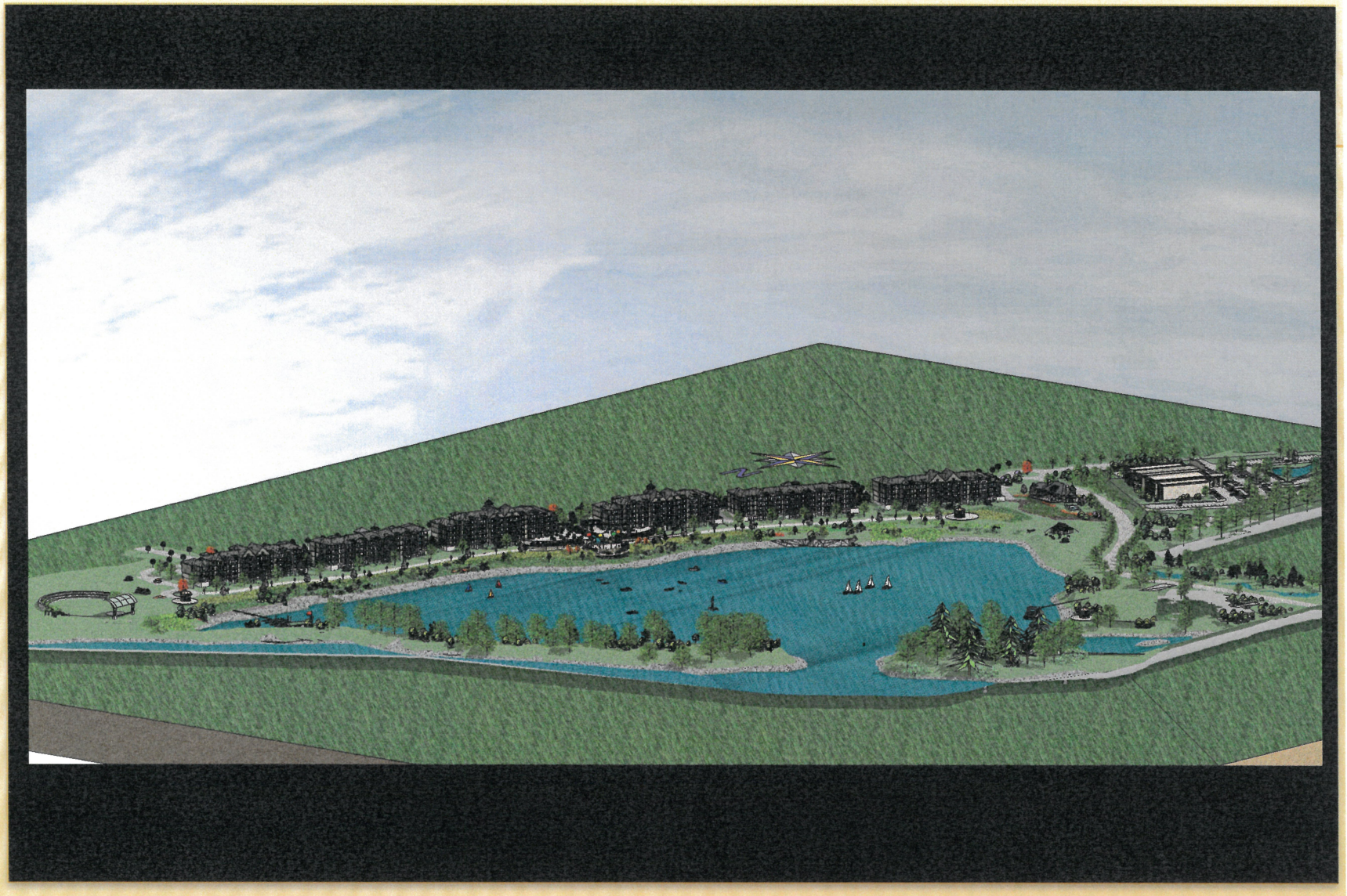
Phase 5 – Two additional Condominium Buildings




PHASE 6 – CONDOMINIUM BLDGS 5 & 6




Phase 6 – Two additional Condominium Buildings



Phase 6 – Two additional Condominium Buildings



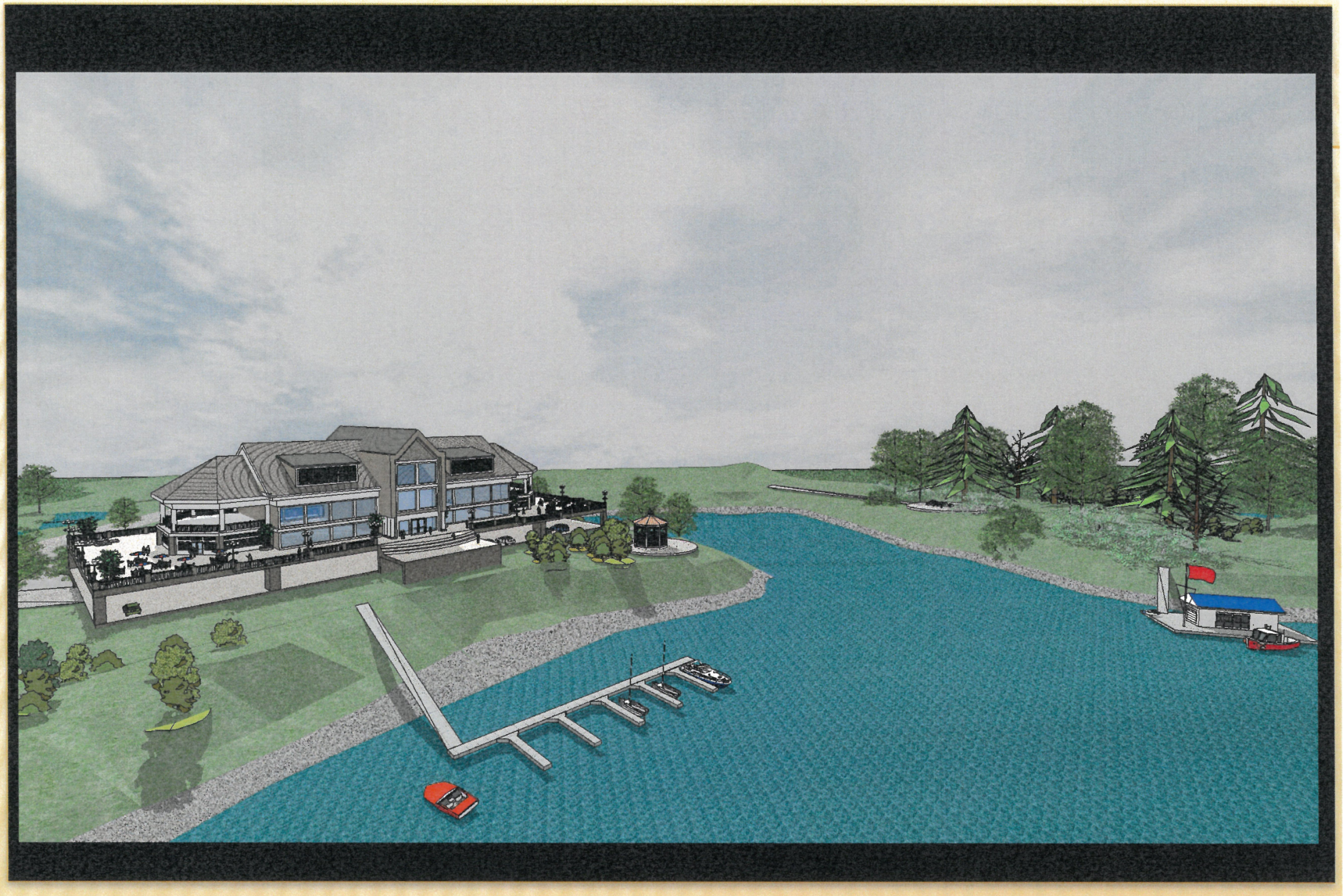

Phase 7 & 8 – Mixed Use Building - Marina & Docks – Water Sports Center



Phase 7 & 8 – Mixed Use Building & Marina & Docks



Phase 7 & 8 – Mixed Use Building – Facing East



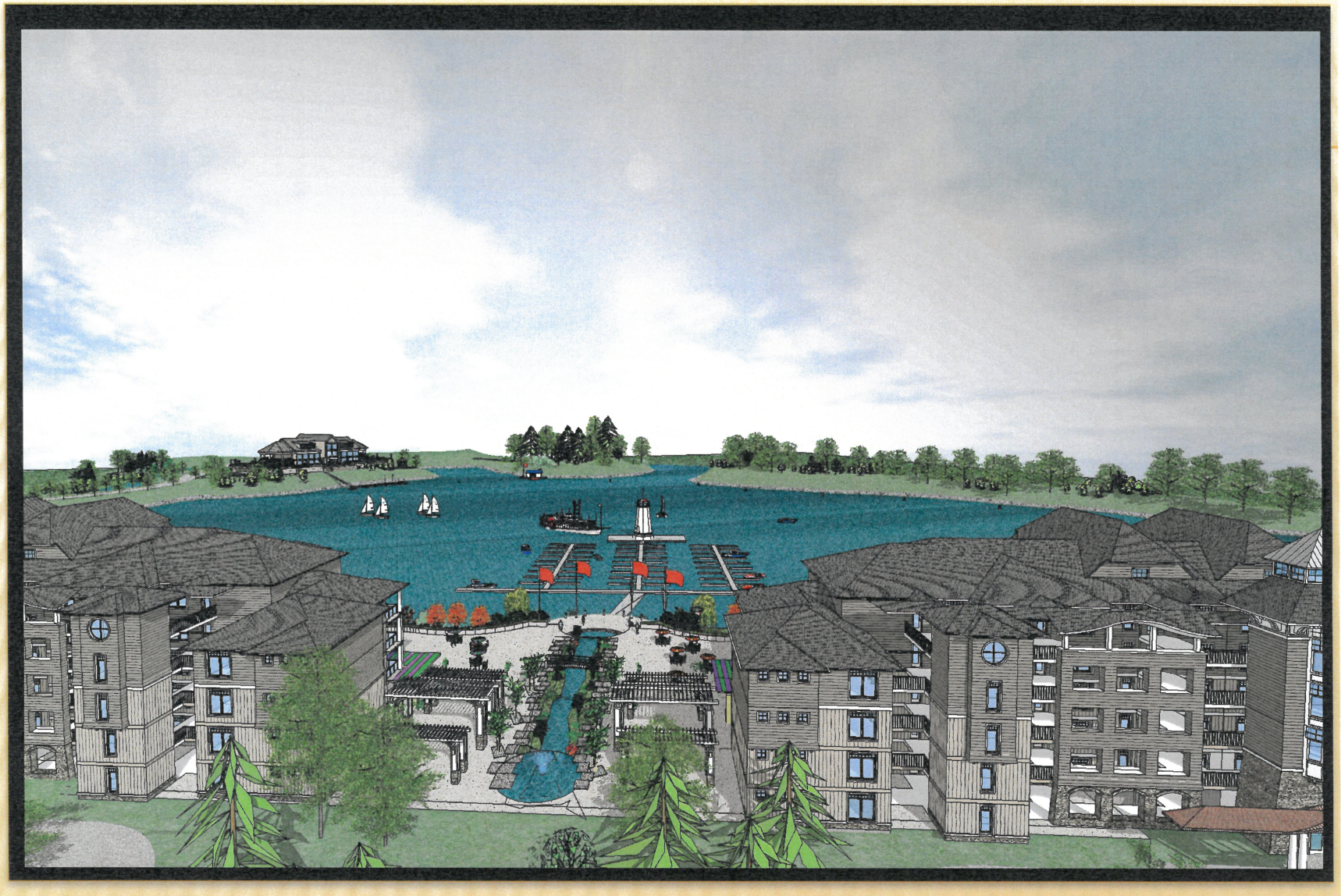
Phase 7 & 8 – Mixed Use Building – Facing West



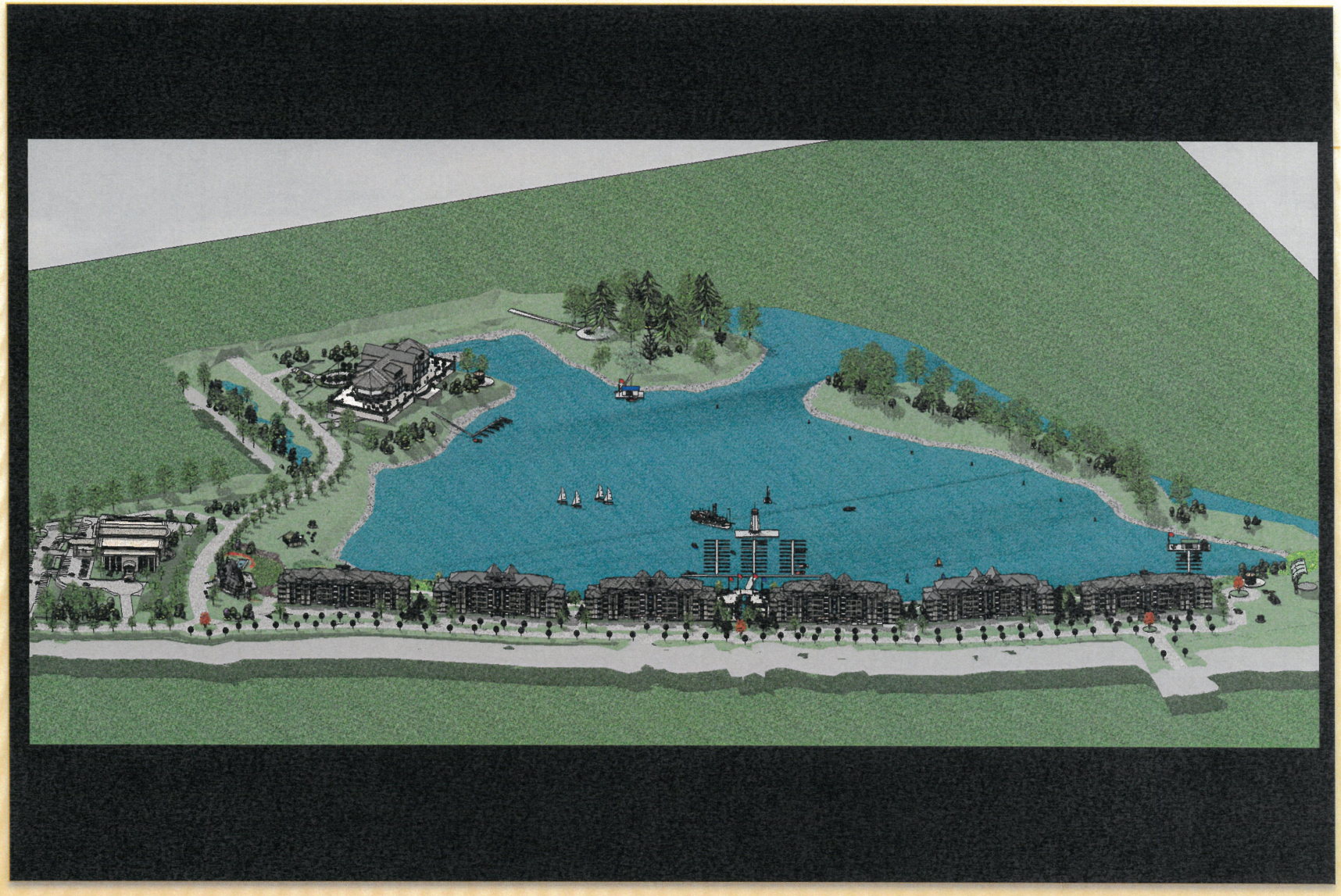
Phase 8 – Marina



Overview of *The Cove*



Overview of *The Cove*



Overview of *The Cove*




# The Cove



RIPARIAN ENHANCEMENT







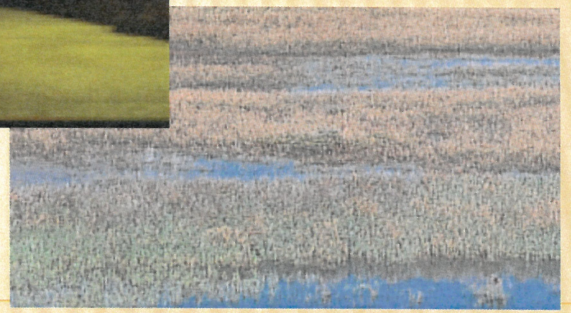
ECOSYSTEM PRESERVATION







STEWARDSHIP VALUES



CREATION OF NEW WETLAND HABITAT

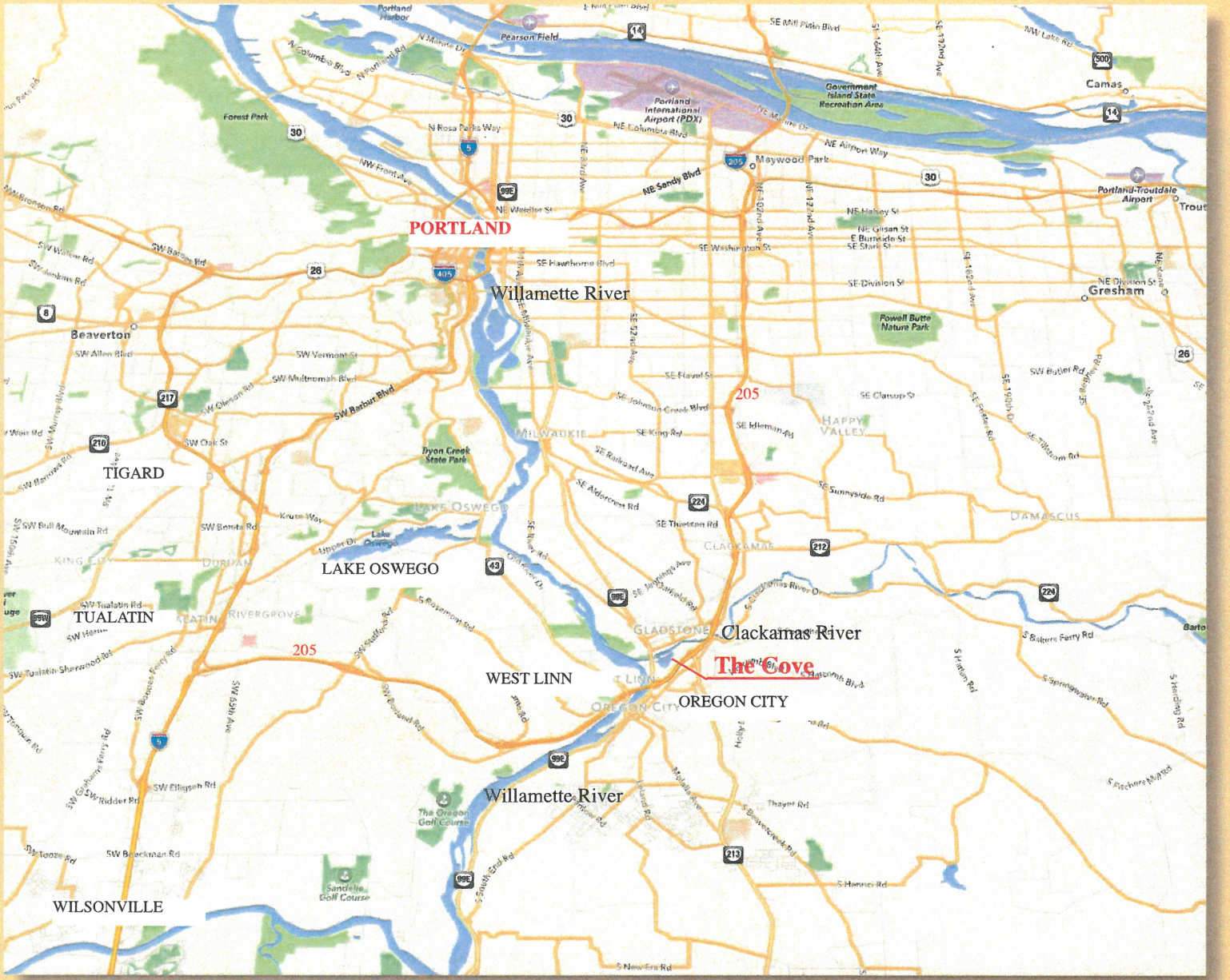
*We've Changed the Environment*

*We've Made it Better*




A Mixed Use Waterfront Master Planned Community

An Integrated Water Quality and Habitat Resource Proposal


PORTLAND
Willamette River
Clackamas River
The Cove
OREGON CITY
WEST LINN
LAKE OSWEGO
TIGARD
TUALATIN
WILSONVILLE
Beaverton
Gresham
Camas
Maywood Park
Portland International Airport (PDX)
Government Island State Recreation Area
Portland-Troutdale Airport
Powell Butte Nature Park
Tryon Creek State Park
Forest Park
Pearson Field
Portland Harbor
205
205

MAP

The Cove

# INTRODUCTION

As the Master Planning Developers' of The Cove we would like to propose a formal program to resolve the water quality concerns, enhance and create new habitat resources and ensure public safety at The Cove.

In concert with preliminary efforts from Cascade Environmental Group (John Runyon) a preliminary Critical Path has been defined as a guideline for moving this program forward. Further, a dialogue has been opened with Tammy Stempel from the City of Gladstone with regards to combining efforts and potentially City of Gladstone properties to create a Landmark environmental resource within The Cove.

Subject to refining a concept plan and City approvals, a joint intergovernmental agreement could be defined whereby resources and land could be combined to create a significant new resource, preserve and enhance wetlands, aquatic habitats, water quality and ensure public safety at The Cove. Improved habitat and natural resources would be integrated with the recreational features and access points.

The following outline is a preliminary overview of a path forward to investigate and concept this extraordinary opportunity to improve and add to the existing natural assets of The Cove.



STUDY AREA

# COMPLETE FEASIBILTY STUDY

1. REVIEW EXISTING DATA & PLANS

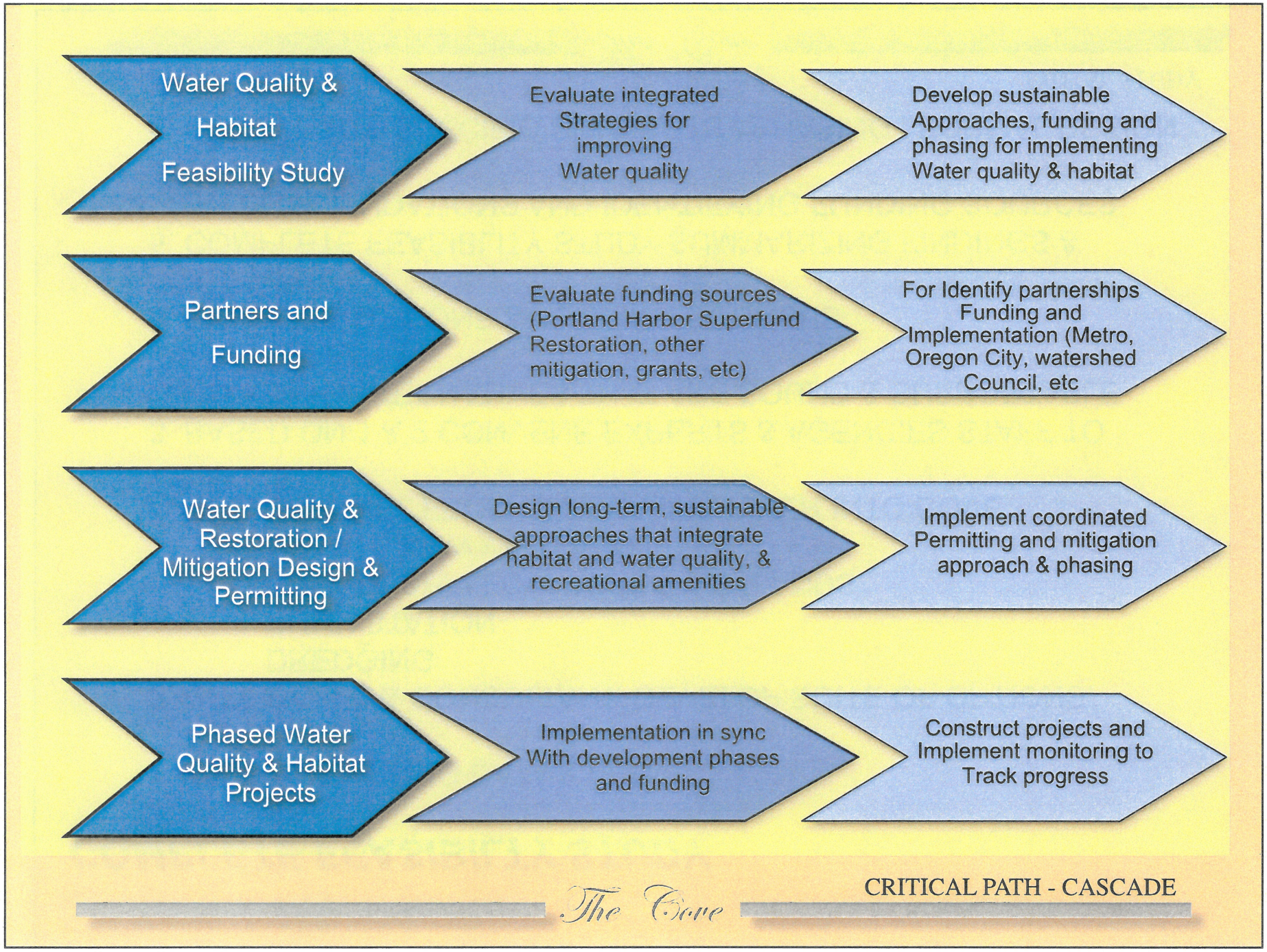
2. CITY, CCLLC & CONSULTANT: DEVELOP SUITE OF OPTIONS:
   - DREDGING
   - PUMP STATION
   - CREATE SHALLOW WATER WETLANDS
   - CREATE NEW WETLAND
   - CHANNEL FROM CLACKAMAS RIVER INTO COVE

3. BASED ON 1 & 2 CONVENE EXPERTS & AGENCIES STAFF TO EXPLORE ALTERNATIVES THAT ARE SOUND & SUPPORTABLE

4. EVALUATE OPTIONS & FUNDING SOURCES

5. COMPLETE FEASIBLITY STUDY SUMMARIZING FINDINGS & RECOMMENDATIONS AND IDENTIFYING FUNDING SOURCES.

6. LAYOUT SITE SPECIFIC CONCEPTS / PHASING / FORMAL DESIGN


Water Quality & Habitat Feasibility Study
Evaluate integrated Strategies for improving Water quality
Develop sustainable Approaches, funding and phasing for implementing Water quality & habitat
Partners and Funding
Evaluate funding sources (Portland Harbor Superfund Restoration, other mitigation, grants, etc)
For Identify partnerships Funding and Implementation (Metro, Oregon City, watershed Council, etc
Water Quality & Restoration / Mitigation Design & Permitting
Design long-term, sustainable approaches that integrate habitat and water quality, & recreational amenities
Implement coordinated Permitting and mitigation approach & phasing
Phased Water Quality & Habitat Projects
Implementation in sync With development phases and funding
Construct projects and Implement monitoring to Track progress
The Cove
CRITICAL PATH - CASCADE

# Water Quality & Habitat Feasibility Study

*Habitat and water quality

*Environmental baseline

*Mitiation opportunities

*Engage consultants, stakeholders, and agencies

*Model and evaluate flows, water quality & habitat

*Recreational uses and impacts

*Sustainable approaches integrated with development

*Identify costs & permiting pathways

*Identify funding sources

EVALUATE INTEGATED SOLUTIONS.

FOR EXAMPLE:

1. DREDGING AND CIRCULATION

2. PLACING DREDGING MATERIALS TO CREATE SHALLOW WATER WETLANDS TO IMPROVE FISH HABITAT AND TO HELP ABSORB NUTRIENTS CONTRIBUTING TO TOXIC ALGAE BLOOMS.

CRITICAL PATH - CASCADE

# Partners and Funding

*Identify funding sources

*Portland Harbor Superfund Restoration

*Stream and Wetland Mitigation - Consider selling surplus credits

*Grants

*Other sources- environmental certification (Salmon Safe development cerification)

*Identify Partners including: Oregon City; Gladstone; Metro; Mitigation Developers, Watershed Council & others

*Establish funding phasing

INTEGRATED FUNDING STRATEGY. FOR EXAMPLE:

PORTLAND HARBOR SUPERFUND NATURAL RESOURCES DAMAGES ASSESSMENT

WETLAND & OTHER MITIATION: ENDANGERED SPECIES ACT

GRANTS SOURCES - METRO NATURE in the NEIGHBORHOOD

CRITICAL PATH - CASCADE

# Water Quality & Restoration / Mitigation Design and Permitting

**Design long-term, sustainable approaches that integrate habitat and water quality considerations & solutions*

**Work to minimize impacts from amenities to decrease mitigation reqmts.*

**Integrate recreational amenities (e.g., docks) into habitat & permitting / mitigation strategy*

**Project phasing integrated with funding and development phases*

***DESIGN PROJECTS THAT INTEGRATE DEVELOPMENT WITH HABITAT AND WATER QUALITY IMPROVEMENTS AND RECREATION.***

***FOR EXAMPLE:***
***IMPLEMENT ON-SITE MITIGATION FOR AQUATIC IMPACTS FROM NEW DOCKS.***

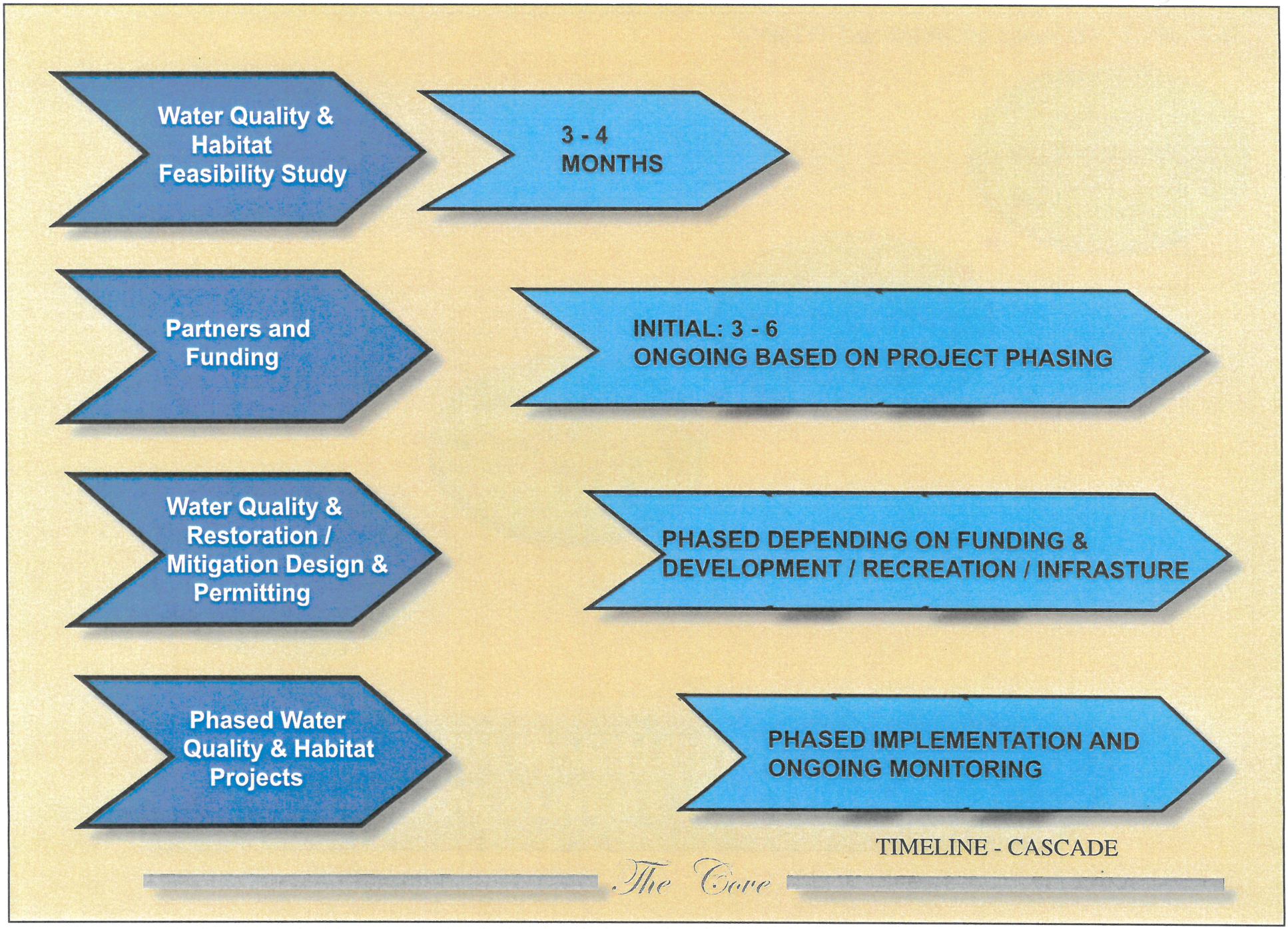
CRITICAL PATH - CASCADE

# Phased Water Quality & Habitat Projects

***Project implementation in sync with development phases, recreational amenities and funding**

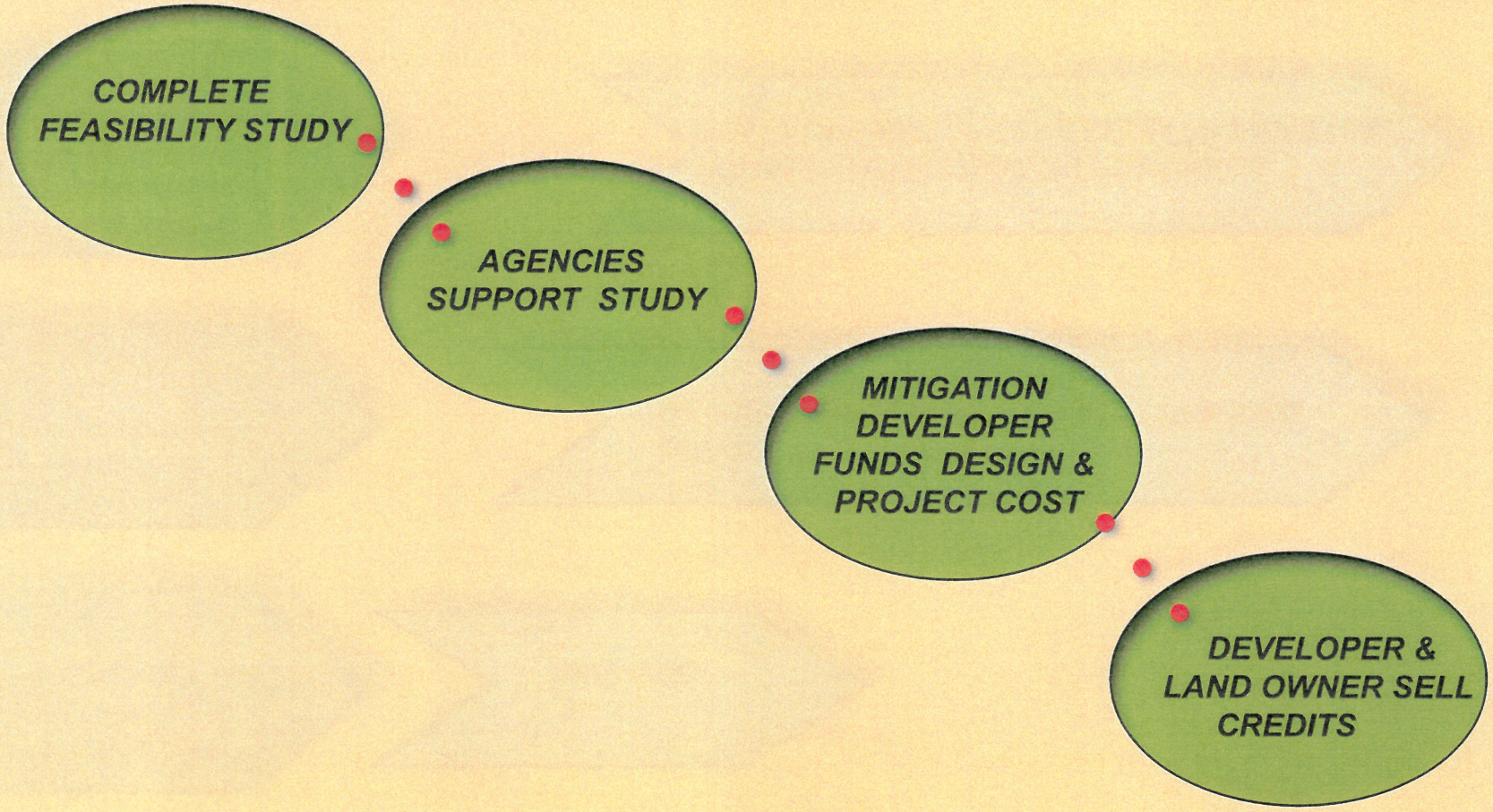
***Construct projects and implement monitoring to track progress**

CRITICAL PATH - CASCADE




TIMELINE - CASCADE

# CAPITAL INVESTMENT & RETURN OF & ON INVESTMENT




CAPITAL INVESTMENT / RETURN - CASCADE

# THE COVE PROJECT DESCRIPTION

PROPERTY:

Master Planned Area

Project Components:

Phase 1- Lot 2 - 244 Garden Apts. - 11 acres - with a small component of office space within 2 apartment bldgs. - leasing office / exercise / pool. This project is to be developed by others.

Phase 2A - Lots 3, 4, 5, 6 & 7 - 225 Waterfront Units to be leased - 8 acres with a small componenet office space in six of the bldgs. 2 Restaurants - leasing office / exercise / pool - on Lot 5

Phase 2B - Lot 1- previously planned for a Mixed Use Building

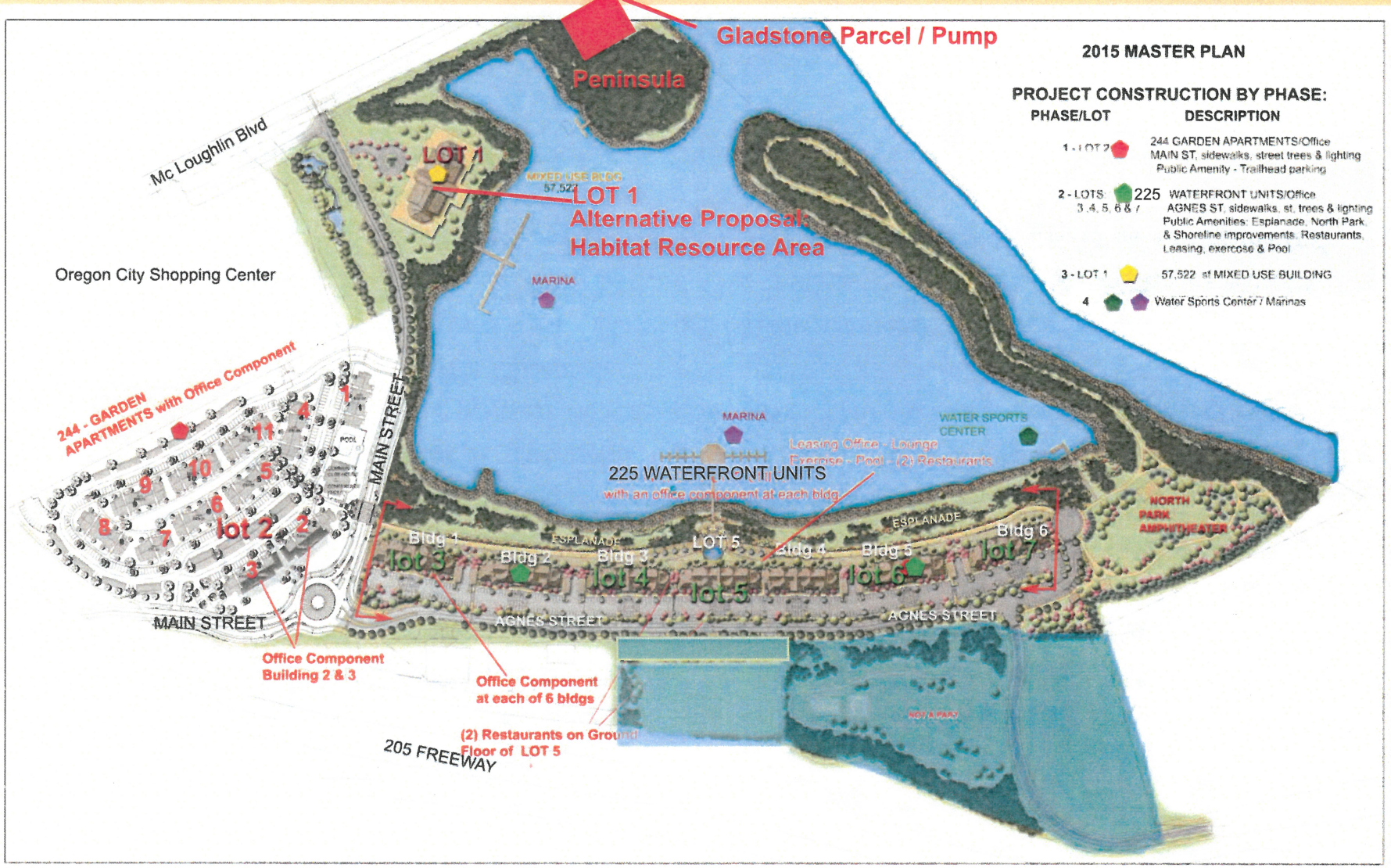
1)**Proposed Alternative Use: Habitat Resource Area - completed with Phase 2**

2)**Peninsula - Habitat Enhancements and Creation**

Phase 3 - Lot 1 - 57,000 Mixed Use Building-Waterfrt. - or Hotel -4.45 acs

**Proposed Alternative Use: Habitat Resource Area - completed with Phase 2**

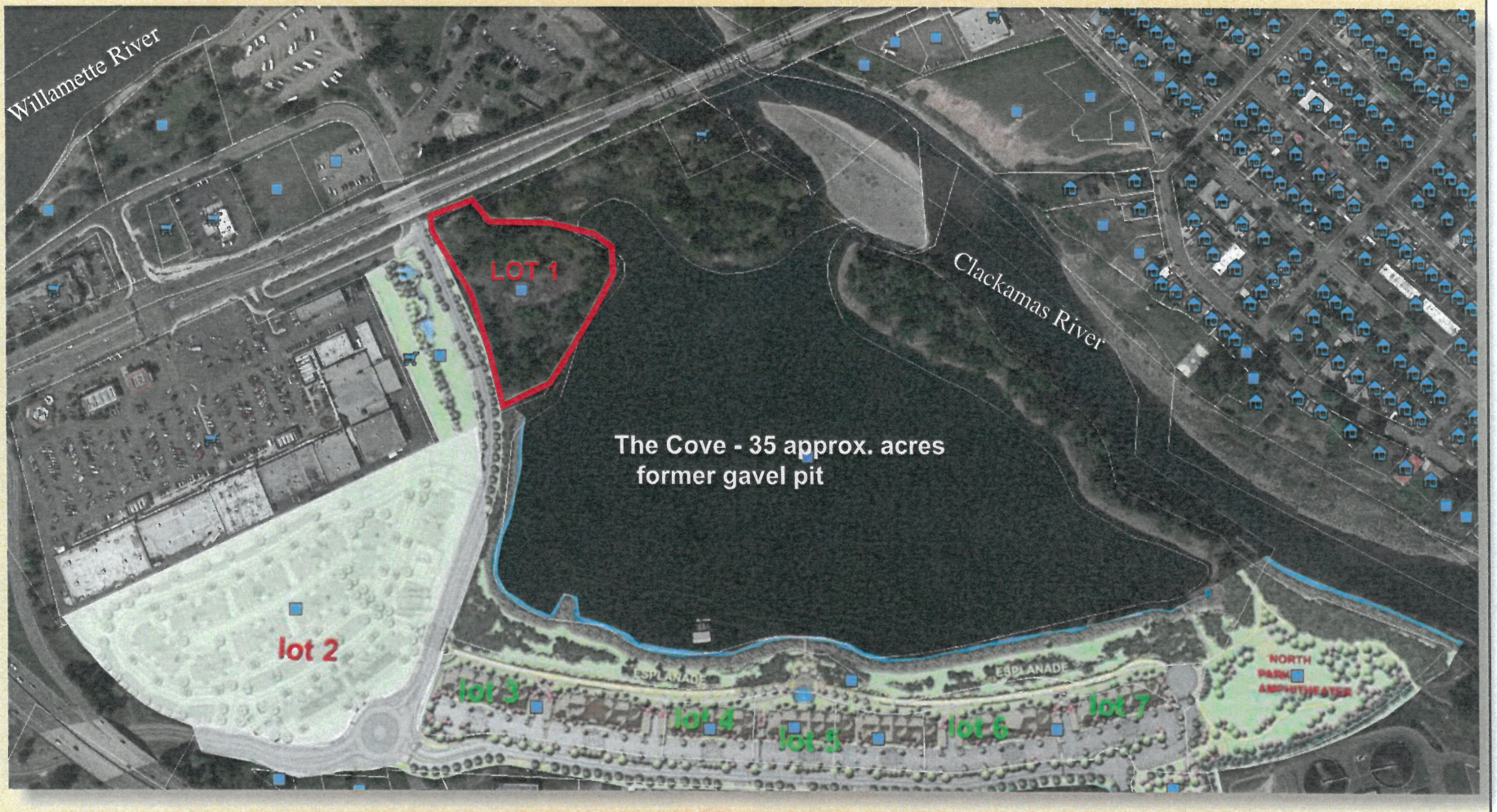
Phase 4 - Water Sports Center / dock




ORIGINAL MASTER PLAN

The Cove

Please note that Lot 1 is at an average elevation of 34 ft - almost 18 feet below the buildable flood plain elevation. It is a natural setting for a mitiagation program.




LOT 1 - 4.45 ACS HABITAT RESTORATION AREA

1. Evaluate removal of dirt & regrade creating natural sloped riparian areas to be seed with native plants.

Please note that the Peninsula is at an average elevation of 37 ft - almost 15 feet below the buildable flood plain elevation. It is a natural setting for a mitiagation program




PENINSULA - NEWLY CREATED WETLANDS AREA

1. Investigagte creating new wetlands and interconnect with Lot 1. Introduction of fresh water from pump into wetland areas.
2. Investigate utilization of Gladstone pump station for introduction of fresh water into Cove.

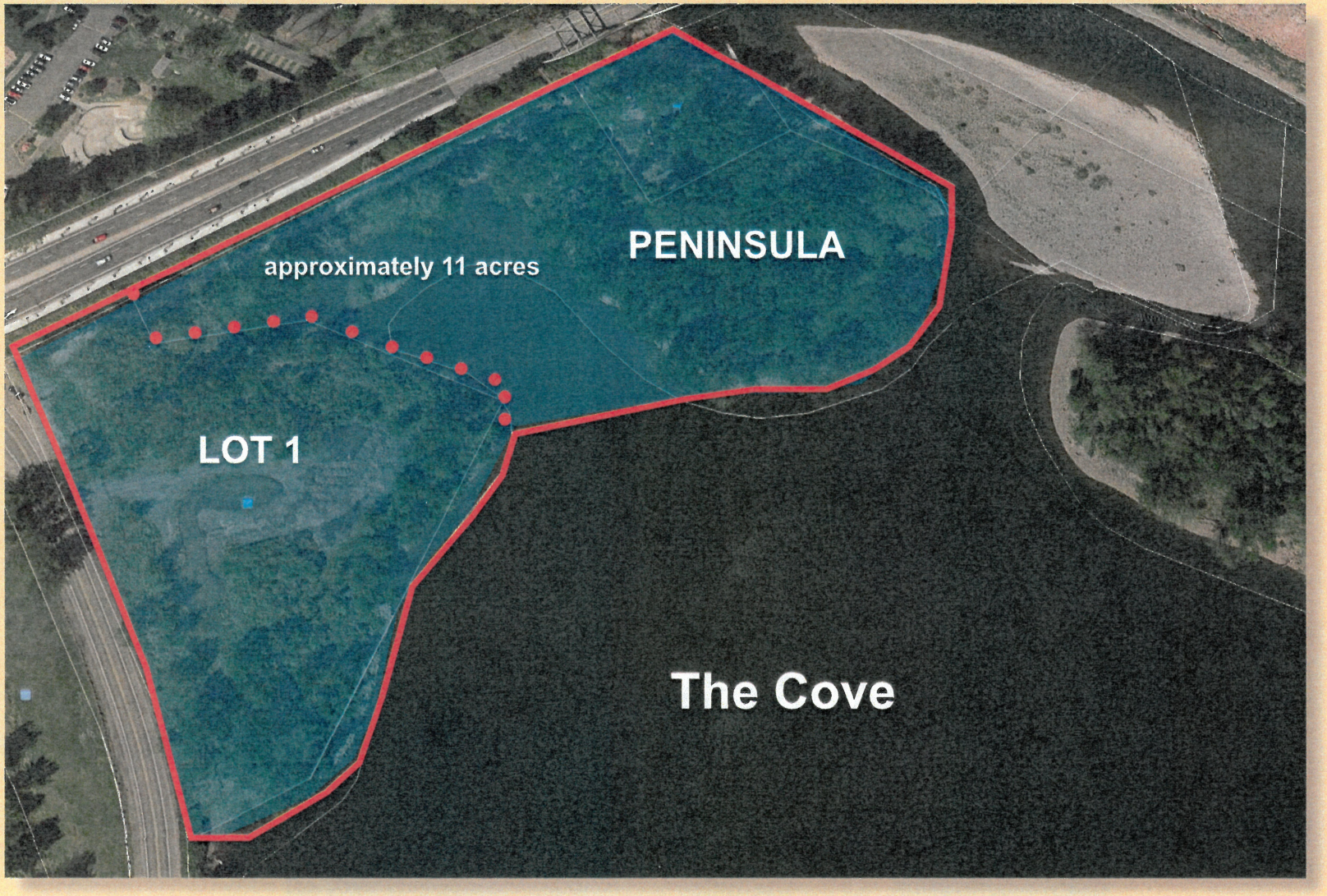
The Cove



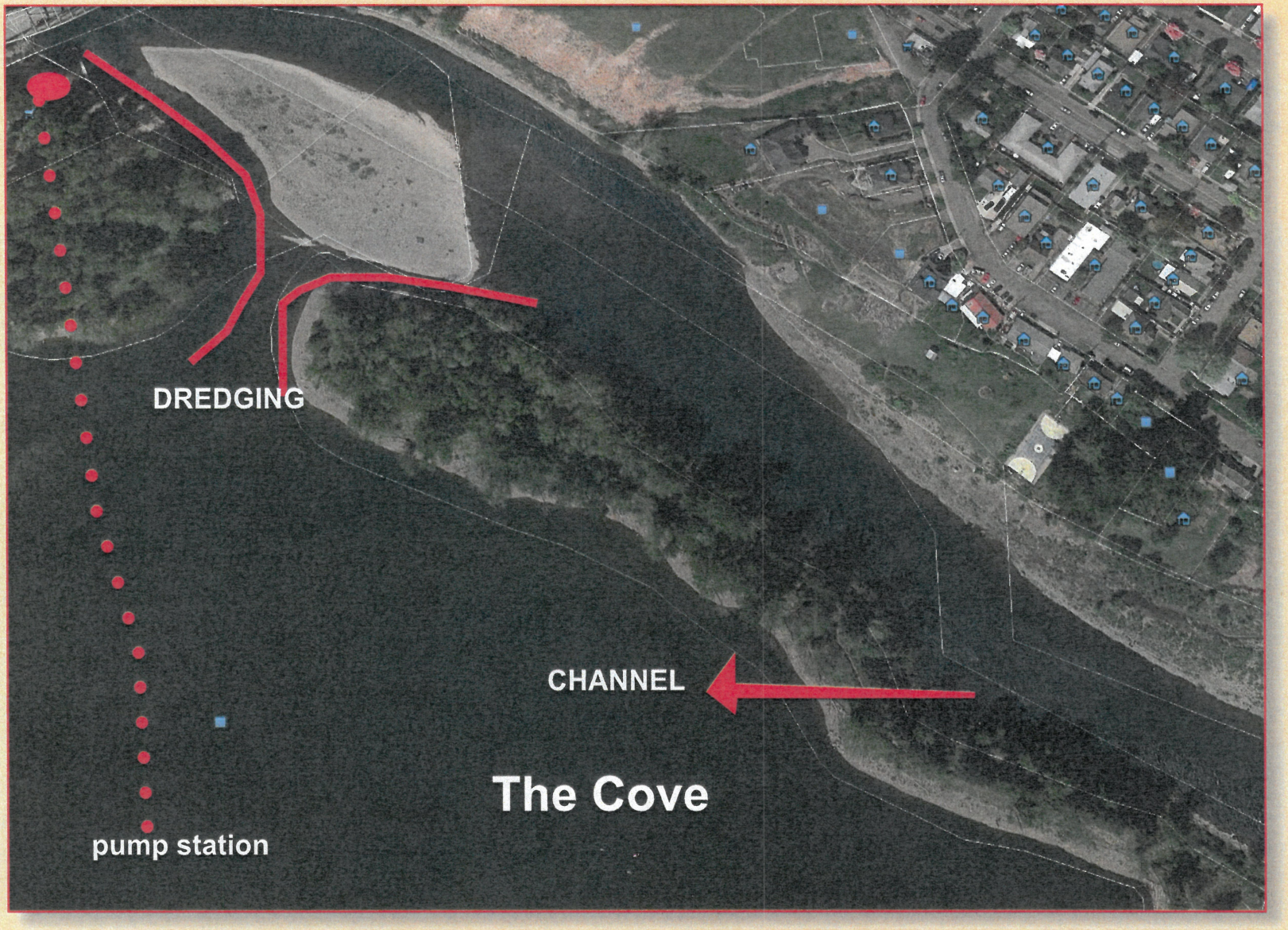

Pump station output has been estimated at 3 million gallons per day. This capacity could circulate the Cove body of water within 20 to 30 days.

PENINSULA -GLADSTONE PARCEL
Address: 16475 Main Street, Oregon City.
Size: .89 acres
Parcel # 00560100. Map No. 22E29 o1700

*The Cove*




HABITAT RESTORATION, RIPARIAN, WETLAND AND HABITAT CREATION AREAS.




WATER QUALITY: Investigate: 1. dredging Mouth of Cove
2. Channel from Clackamas to Cove

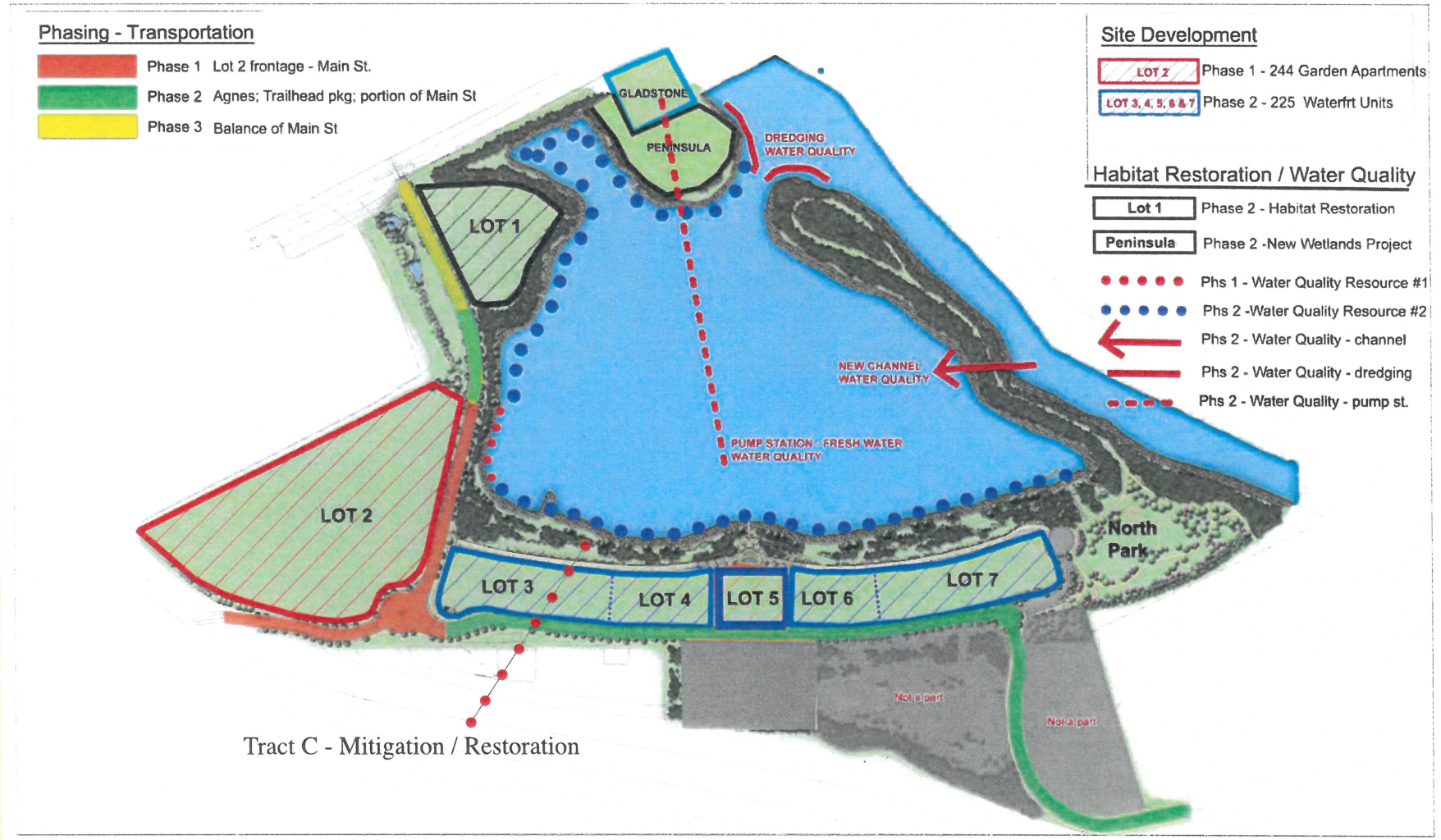
The Cove




INCREASE WATER QUALITY - Investigate the following:

1. Dredging at the mouth of The Cove.
2. New channel to increase fresh water into The Cove & fish access
3. Activate Pump Station - introduce fresh waters to Cove & Wetlands

*The Cove*



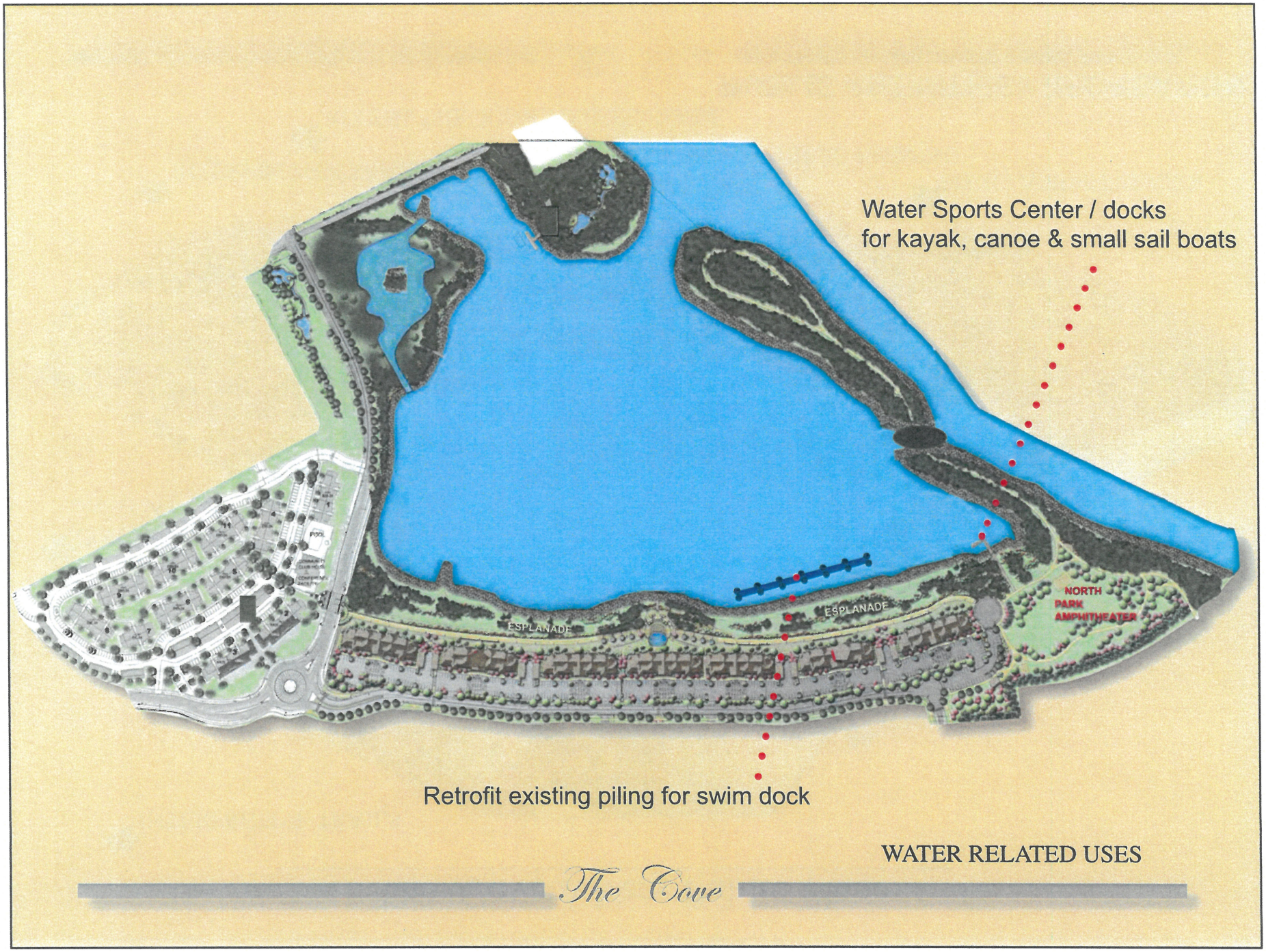

**The Cove**

Infrastructure Phasing - Transportation | Site Development - Phasing | Habitat Restoration / Water Quality - Phasing

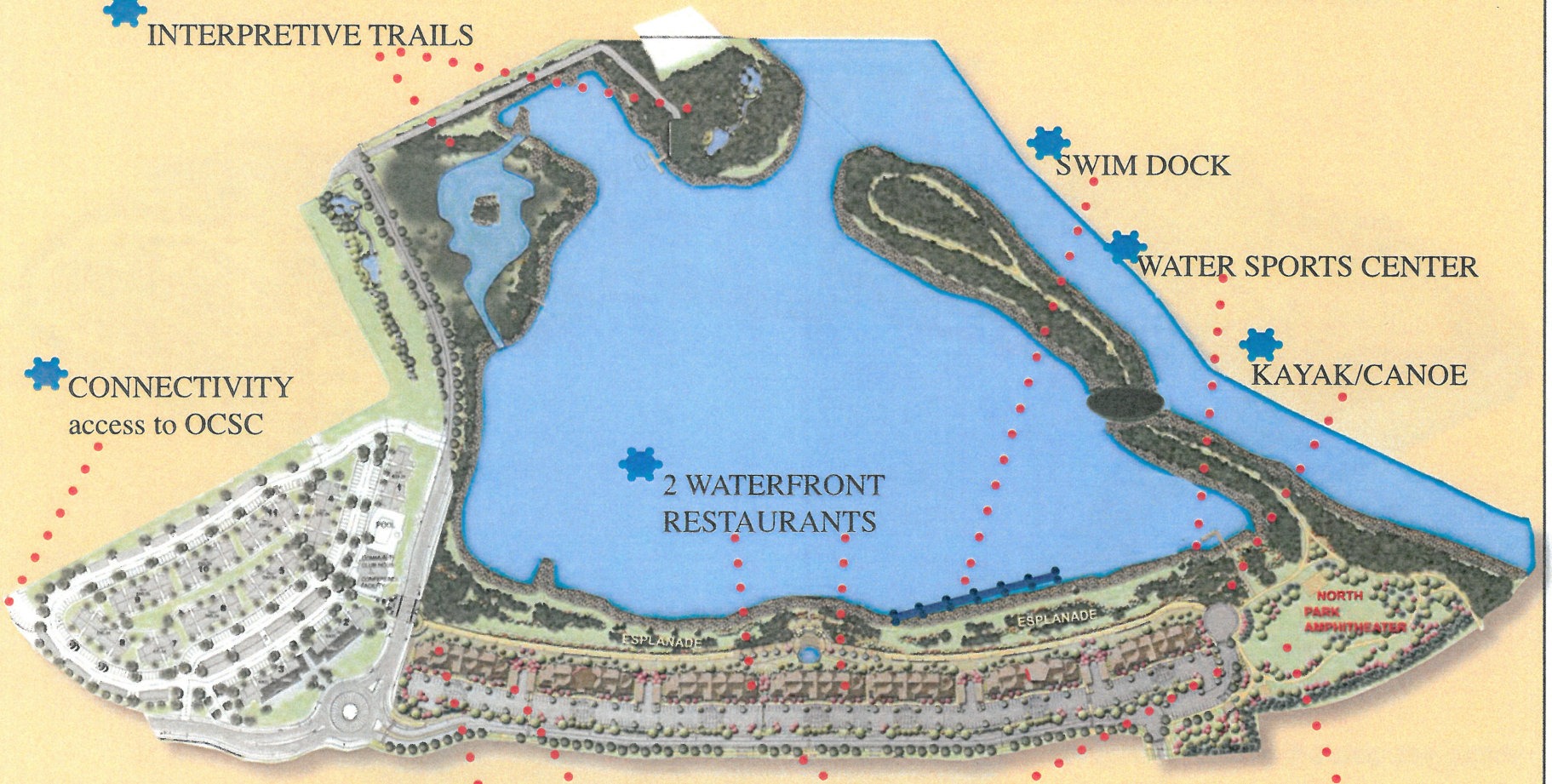
HABITAT RESTORATION / WATER QUALITY / INFRASTRUCTURE

*The Cove*


Habitat Restoration / Creation
Shallow Water Rearing
Pump Station
Wetland Creation
Dredge at Mouth
New Channel
Water Quality Resourse
ESPLANADE
ESPLANADE
NORTH
PARK
AMPHITHEATER
Tract C (2,6 acs) - Mitigation area
RESTORATION / WATER QUALITY
The Cove

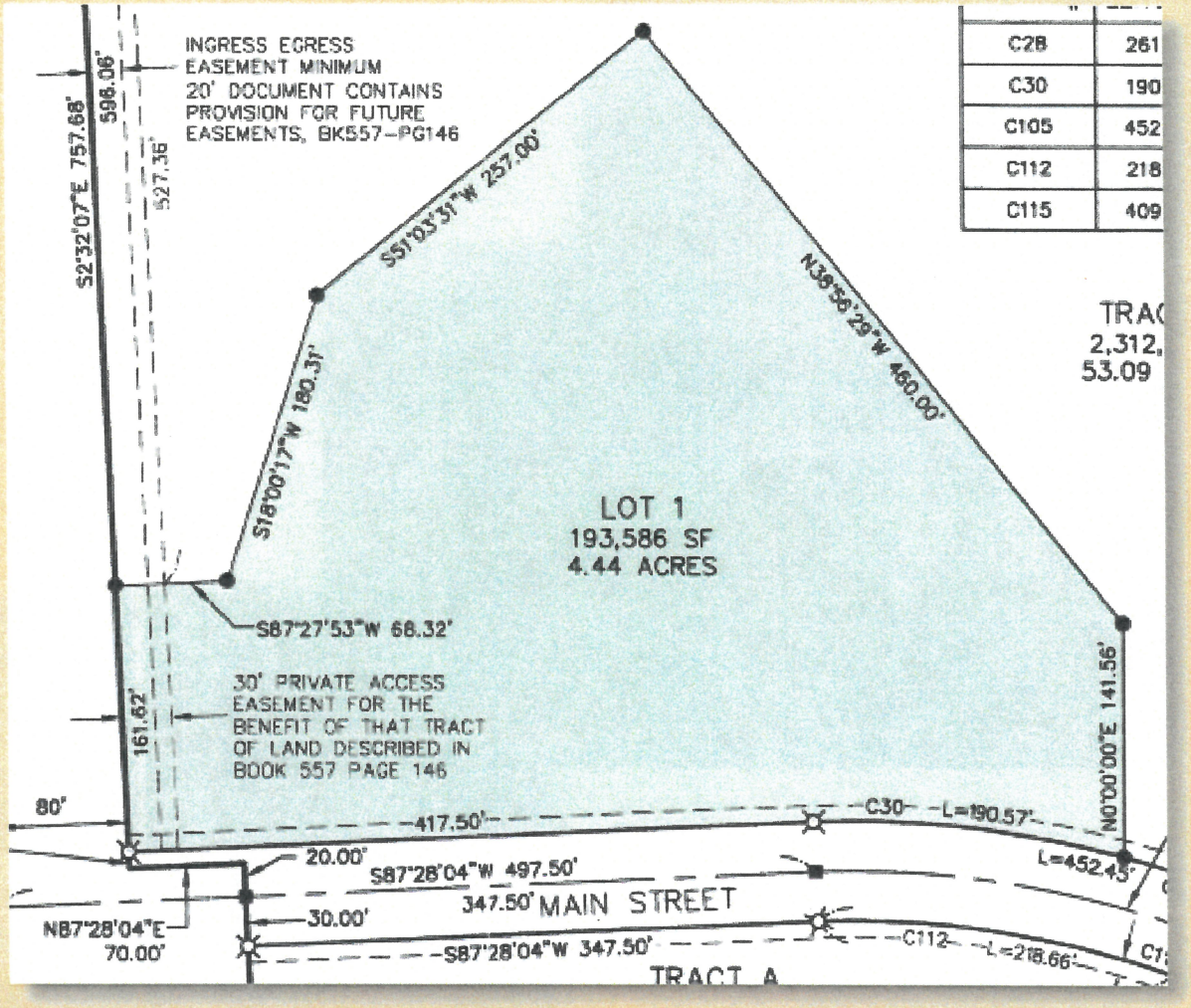

Water Sports Center / docks
for kayak, canoe & small sail boats
ESPLANADE
ESPLANADE
NORTH
PARK
AMPHITHEATER
Retrofit existing piling for swim dock
WATER RELATED USES
The Cove

# The Cove A Very Public Place



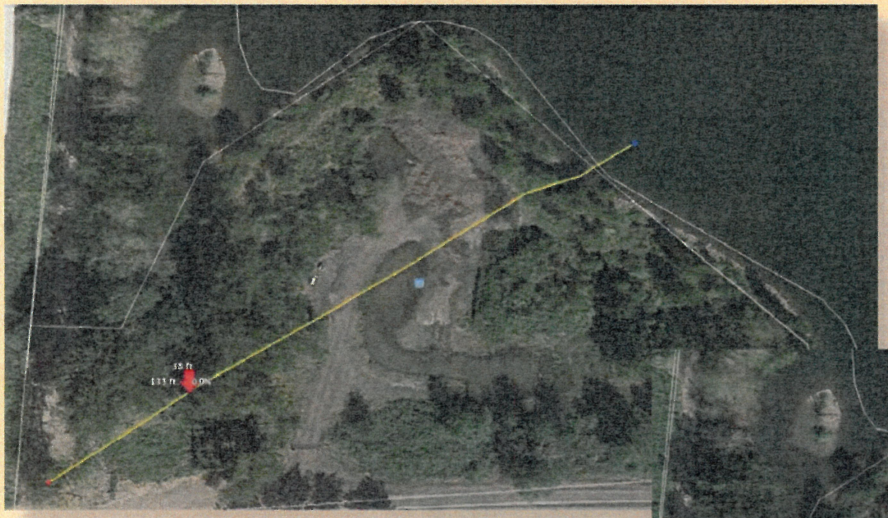

**PUBLIC AMENITIES / RECREATION**

*The Cove*




LOT 1 - PLAT MAP

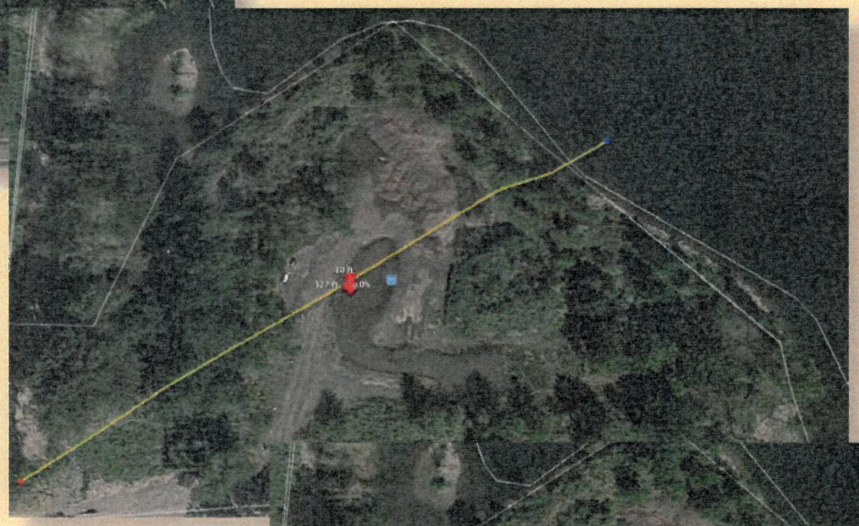
# LOT 1 - TOPO ELEVATIONS



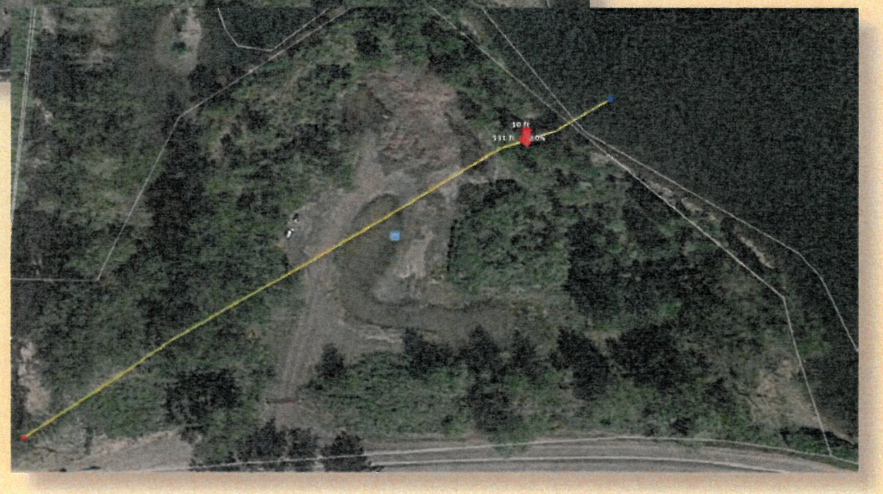
ELEVATION 38

FLOODPLAIN ELEVATION IS AT 50.7
NEED TO BUILD AT ELEVATION 52

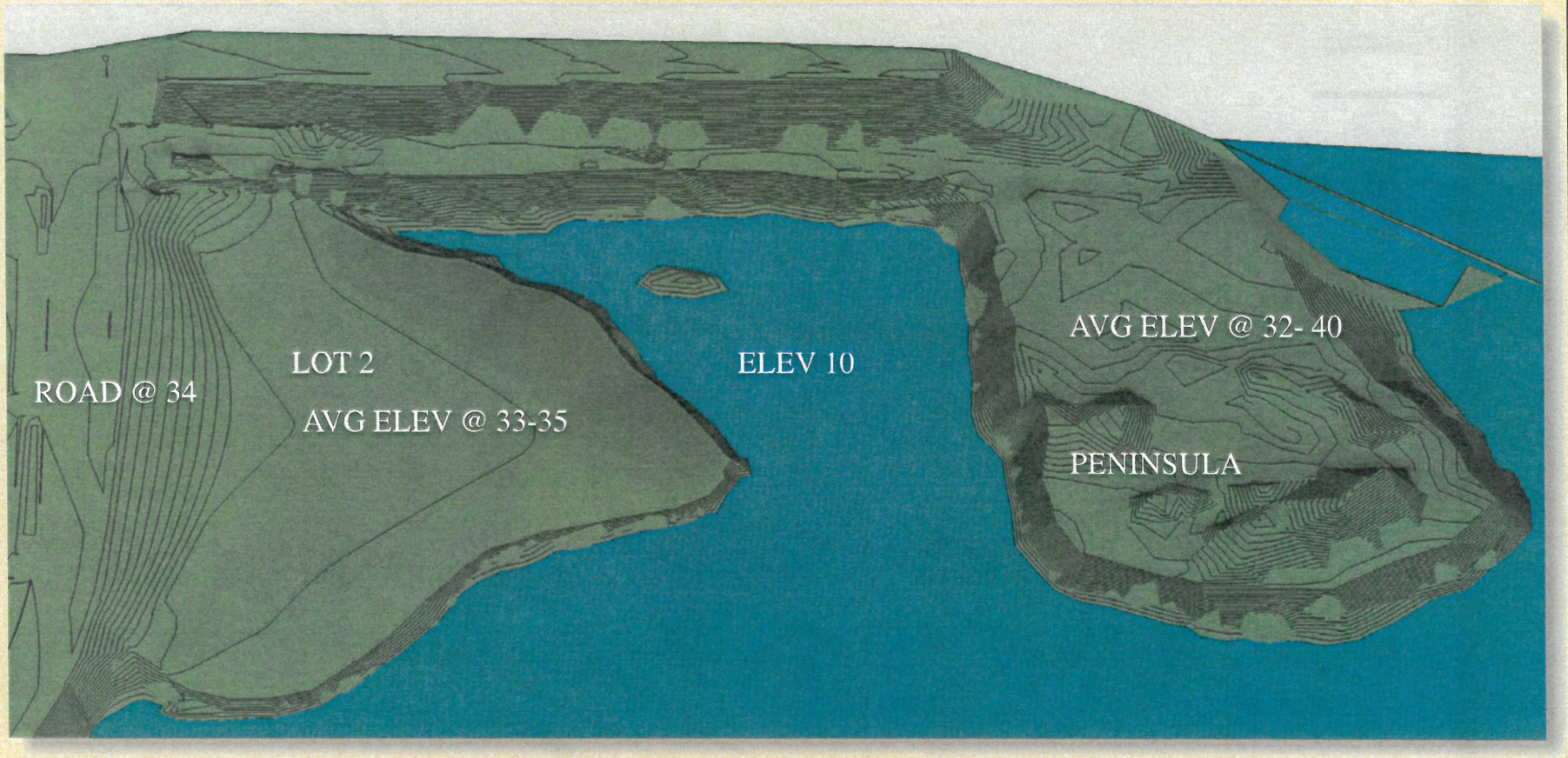
ROAD IS AT ELEVATION 34 THEREFORE
NO EXIT DURING FLOOD



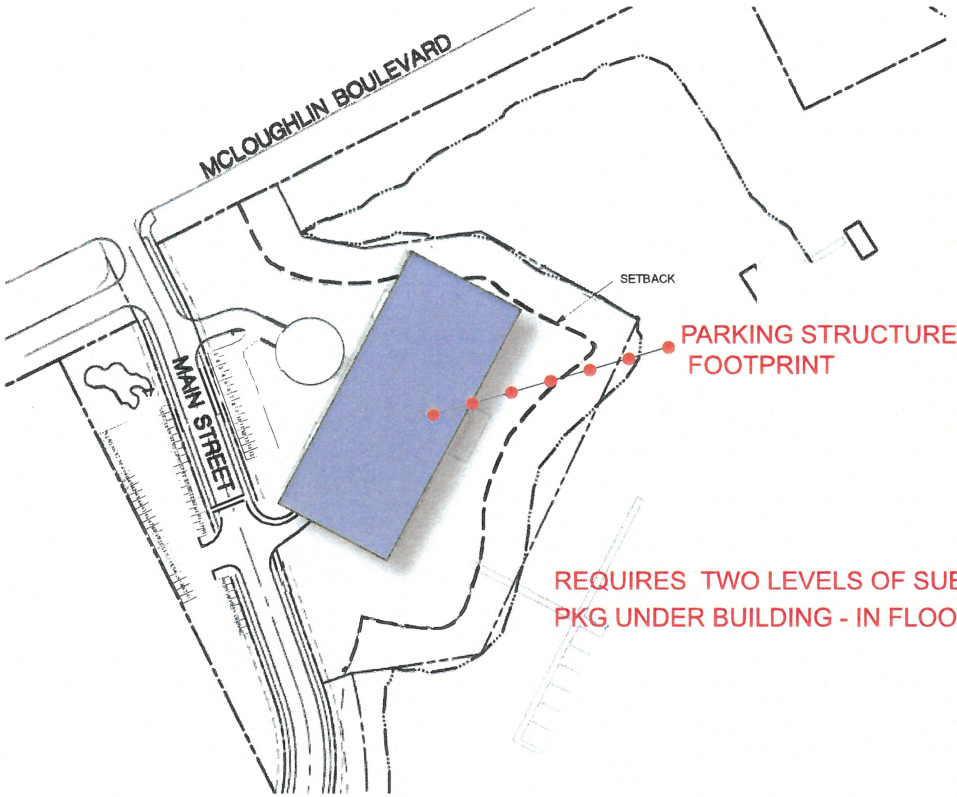
ELEVATION 10



ELEVATION 10




LOT 1 & PENINSULA



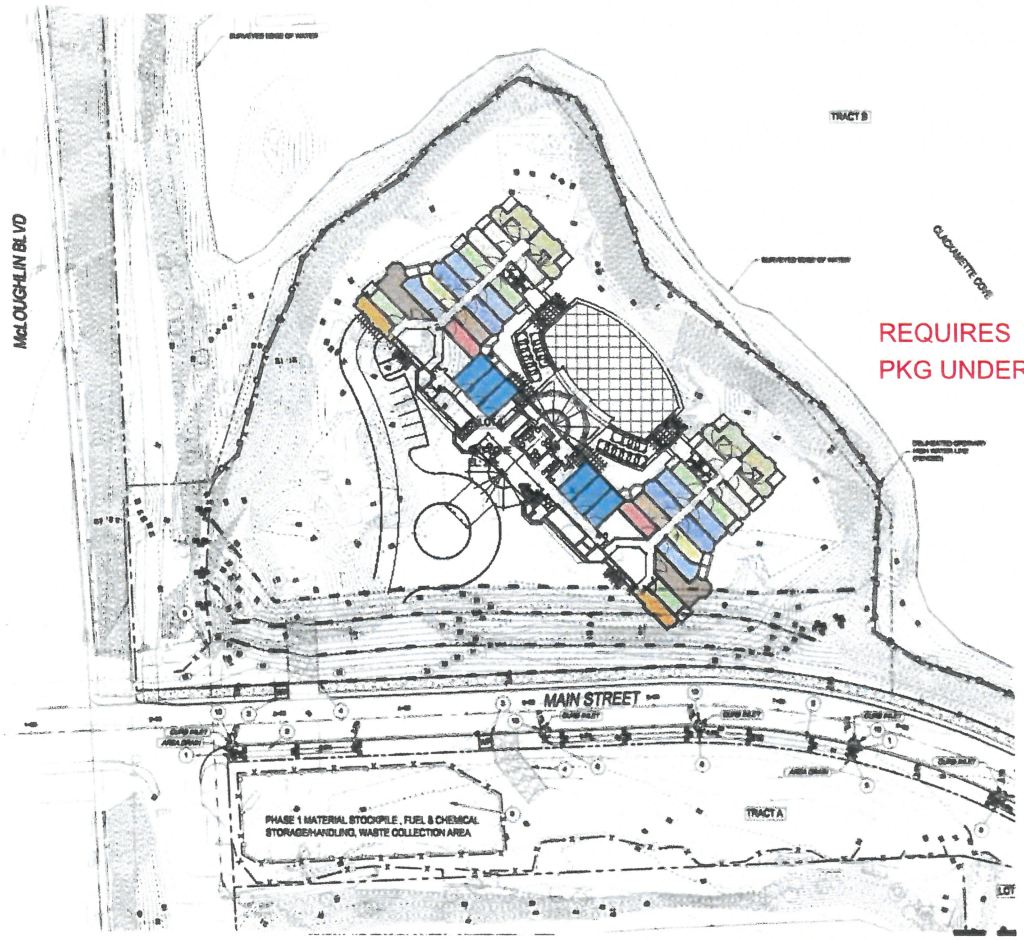

SITE PLAN

OFFICE BUILDING
THE COVE
PACIFIC PROPERTY SEARCH, LLC
OREGON CITY, OREGON

*OFFICE BUILDING*
*SITE PLAN*

# LOT 1 - OFFICE CONCEPT

*The Cove*




REQUIRES TWO LEVELS OF SUBTERRANEAN PKG UNDER BUILDING - IN FLOODPLAIN

THE COVE INN
SITE PLAN

THE COVE INN
THE COVE
PACIFIC PROPERTY SEARCH, LLC
OREGON CITY, OREGON

# LOT 1 - HOTEL CONCEPT

The Cove

# The Cove Phasing - Vertial Construction

The phasing of the Cove Community has been designed to present two non-competing products to the market simultaneously. Construction is scheduled for Spring of 2016.

**PHASE 1: By others - Grand Cove, LLC ( Grand Peaks Properties - Don Simpson)**

The Garden Apartments - a park like setting with interior gardens.
244 Garden Apartments, leasing office and recreation center / pool / spa

Design Characteristics:

1. Garden setting with surrounding landscaping.
2. Main living spaces oriented to the landscaped grounds.
3. Direct access to The Cove for a variety water sports activities. Direct access to the Clackamas River. Trail system.

**PHASE 2:** The Waterfront Units - setting on the waters edge with a westerly sunset view.
225 units all with an unobstructed view of The Cove.

Design characteristics:

1. Security entrance - keyed and gated main entry into the courtyard of each building.
2. Elevator service to each floor.
3. View orientation to the landscaped waters edge, esplanade and the lake beyond.
4. Direct access to The Cove for a variety of water sports activities. Direct access to the Clackamas River and just beyond to the Willamette River.
5. Single loaded buildings with all units facing The Cove.
6. Lot 5 will incorporate two (2) restaurants, Leasing Office, Exercise facility, Plaza & Pool.

# Phase 1 - 244 Garden Apartments - by others

GARDEN APARTMENTS - 244 UNITS: Grand Cove, LLC (Grand Peaks Properties -Don Simpson) will build and operate the project.

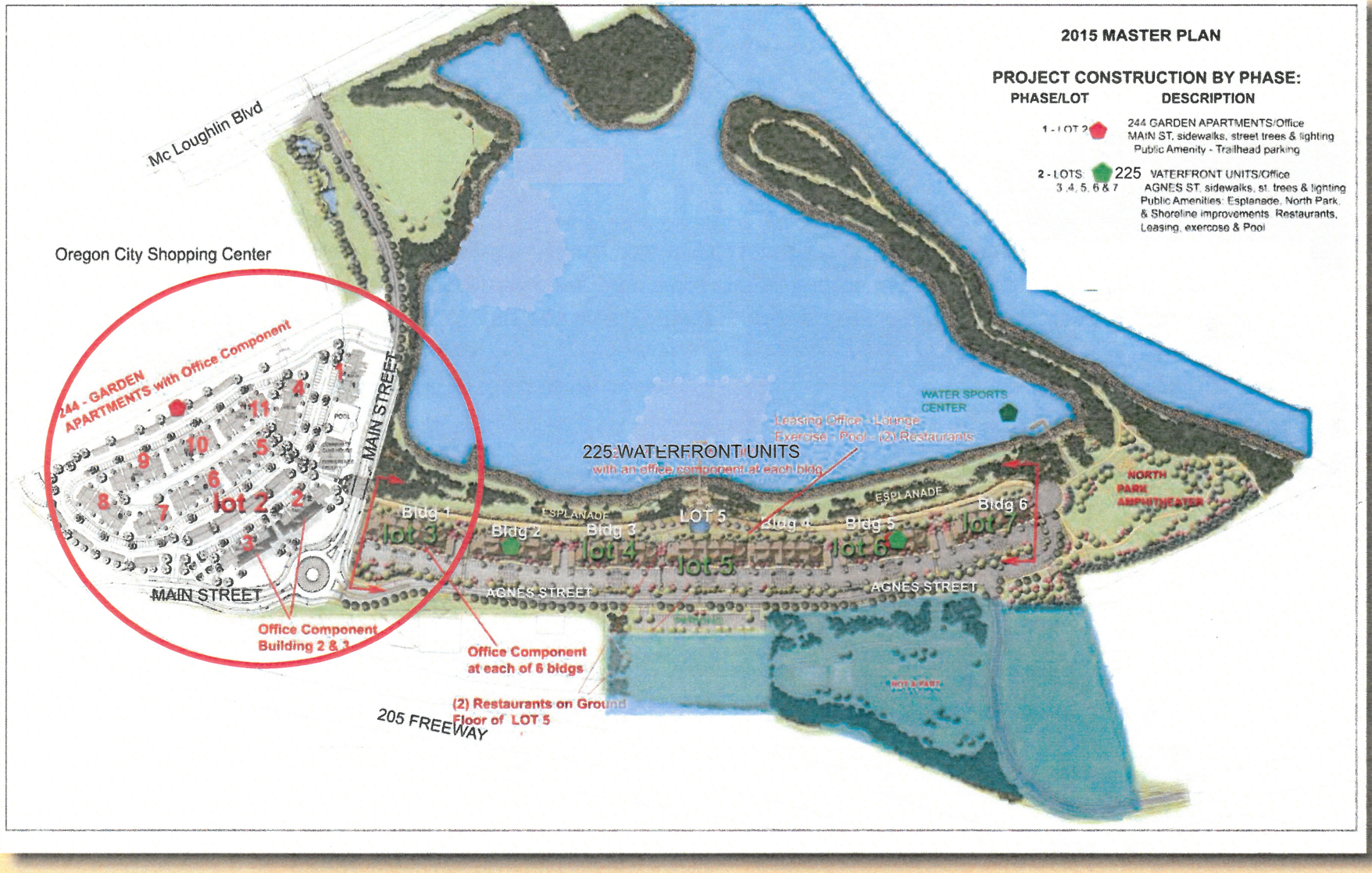
LAND: 11.6 acres- Lot 2.

ENTITLEMENTS: Minor changes to the approved plans to be processed.

CONTRACT DOCUMENTS: Design Dev. Complete. Construction Documents in progress.

LAND: To be Purchased from third party owner.

TAX ABATEMENT: The City has placed a Vertical Housing Zone overlay on the total Master Planned Site. Subject to compliance with the rules this will allow an abatement of the taxes for a ten year period and for the Garden Apartments it will yield a 60% tax abatement. This abatement has been approved.




PHASE 1 - MASTER

The Cove




LOT 2 - 244 GARDEN APTS
FORMER CONCRETE BATCH PLANT

The Cove



LOT 2 - 244 GARDEN APTS concept drwg
MAIN STREET ELEVATION

The Cove



LOT 2 - 244 GARDEN APTS
ESPLANADE CROSSING - concept dwg

*The Cove*

# Phase 2 - 225 Waterfront Residences

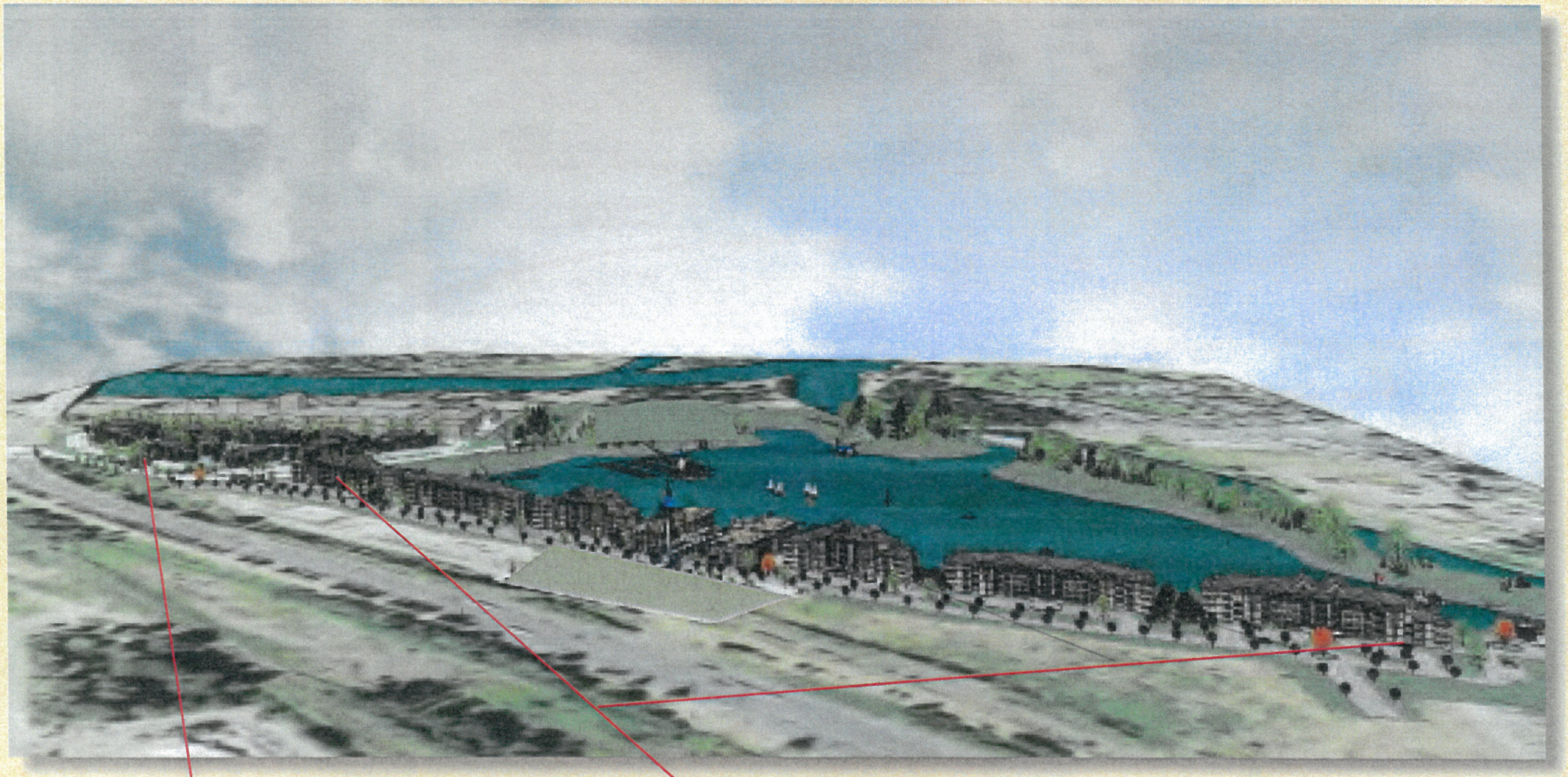
WATERFRONT RESIDENCES - 225 UNITS; Leasing office, (2) restaurants. exerise area & pool

LAND: 8.8 acres- Lots 3, 4, 5, 6, & 7.

ENTITLEMENTS: Minor changes to the approved plans to be processed.

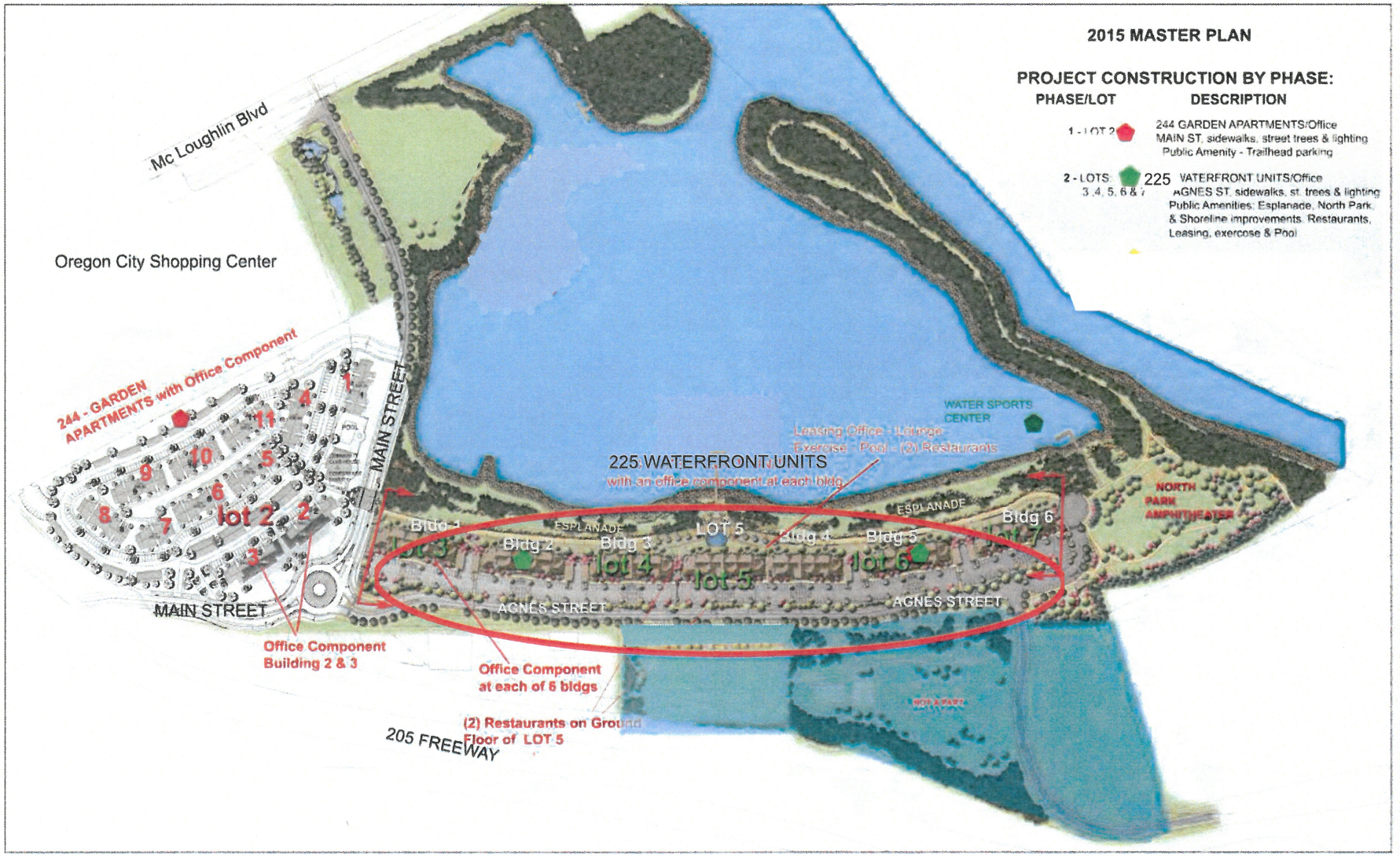
CONTRACT DOCUMENTS: Design Dev. Complete. Construction Documents to be completed.

LAND: The Waterfront property for the 225 units is to be acquired from the URA pursuant to the DDA.




AERIAL VIEW - NORTH

The Cove




PHASE 2 - 225 WATERFRONT APTS

The Cove



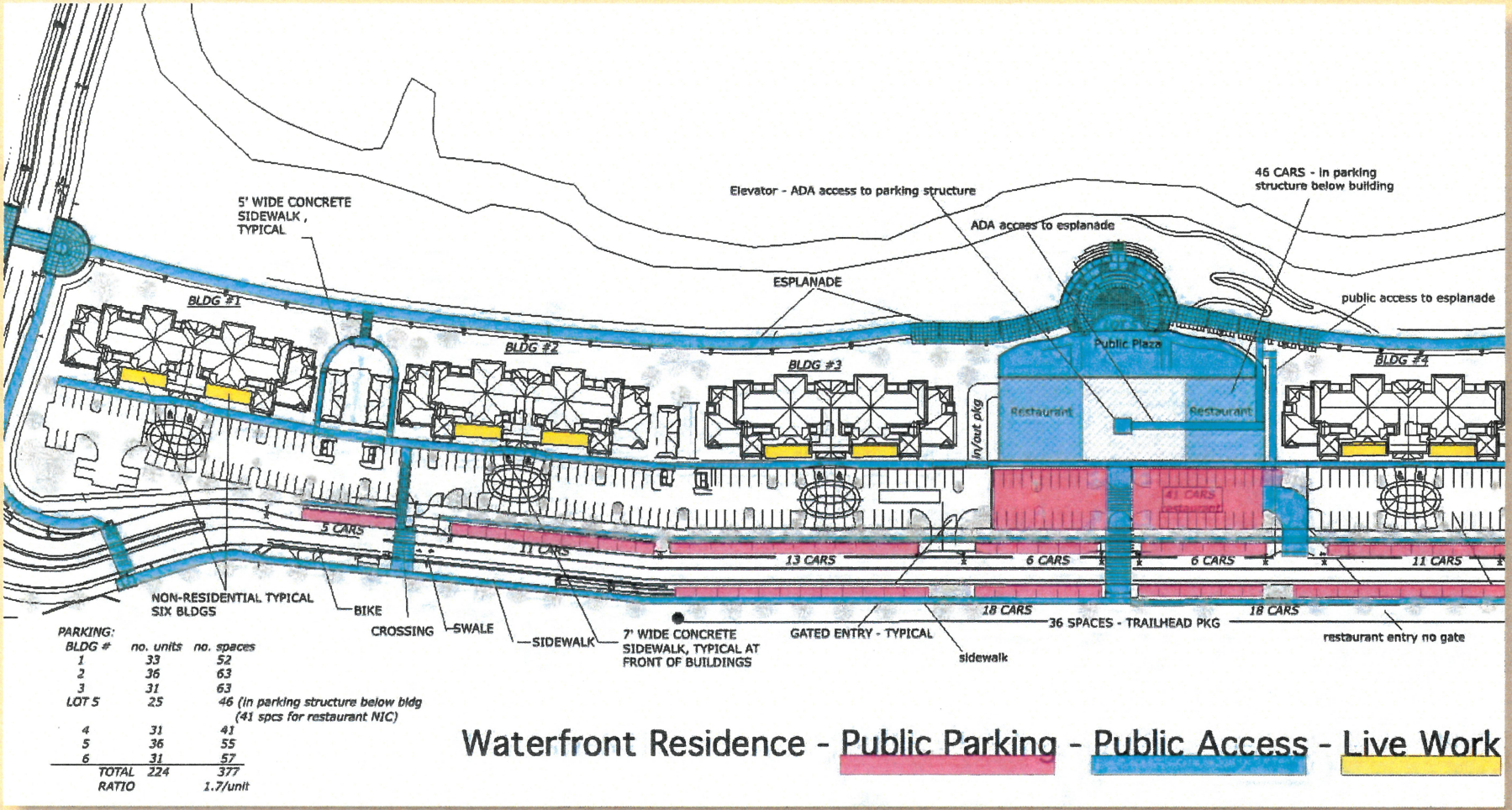

225 WATERFRONT UNITS

ALL BLDGS FOUR STORY

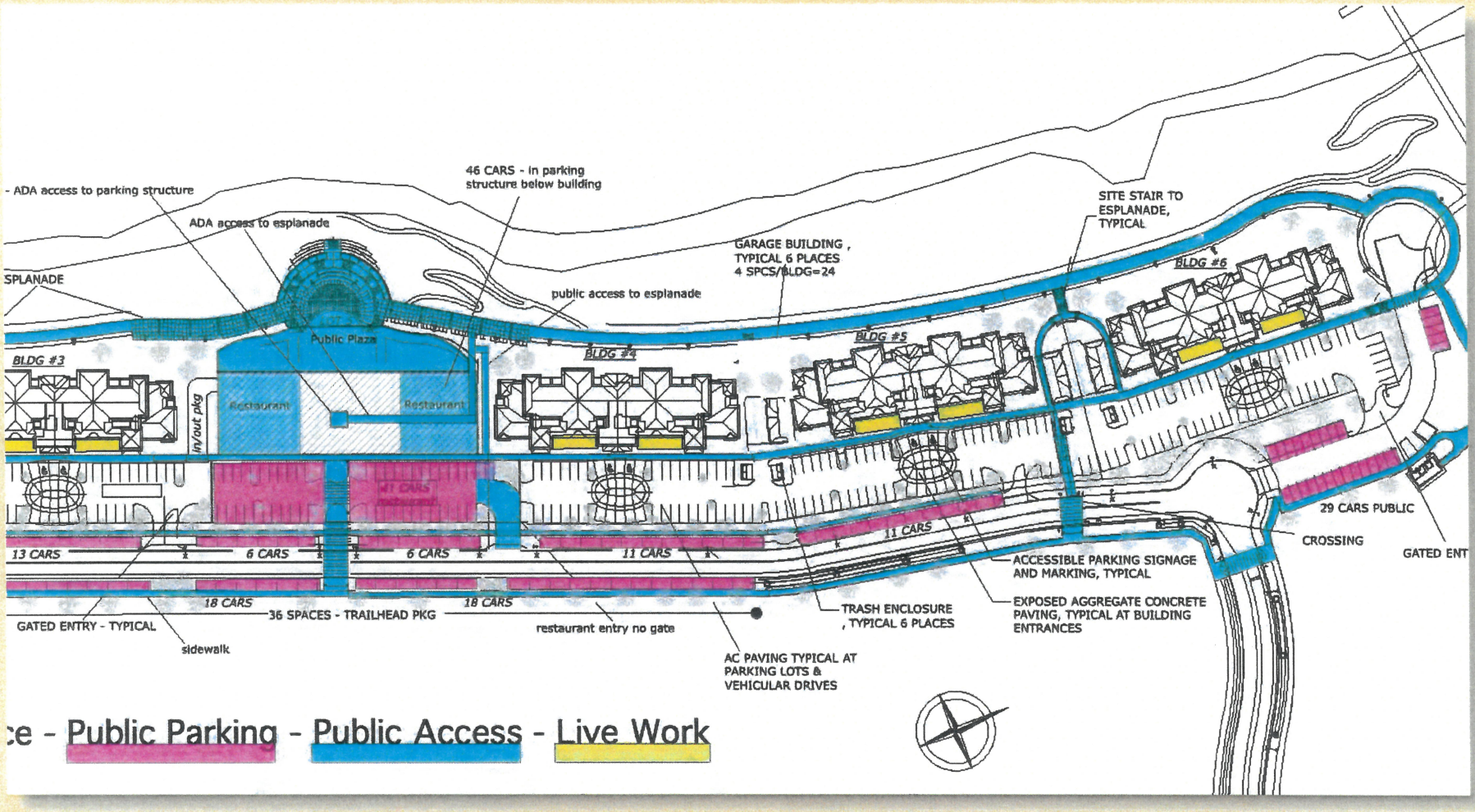
BLDG 1 - 34 UNITS
BLDG 2 - 36 UNITS
BLDG 3 - 31 UNITS

LOT 5 - 25 UNITS + Restaurants (2), Leasing & Exercise, pool
BLDG 4 - 31 UNITS
BLDG 5 - 36 UNITS
BLDG 6 - 32 UNITS

225 SITE PLAN




PARKING SITE PLAN (left side)




PARKING SITE PLAN (right side)



FRONT ELEVATION OF TYPICAL BLDG

The Cove




BACK ELEVATION

*The Cove*



OFFICE COMPONENT - LIVE WORK ON EACH SIDE OF MAIN ENTRY. BLDGS 1, 2, 3, 4, 5 & 6.

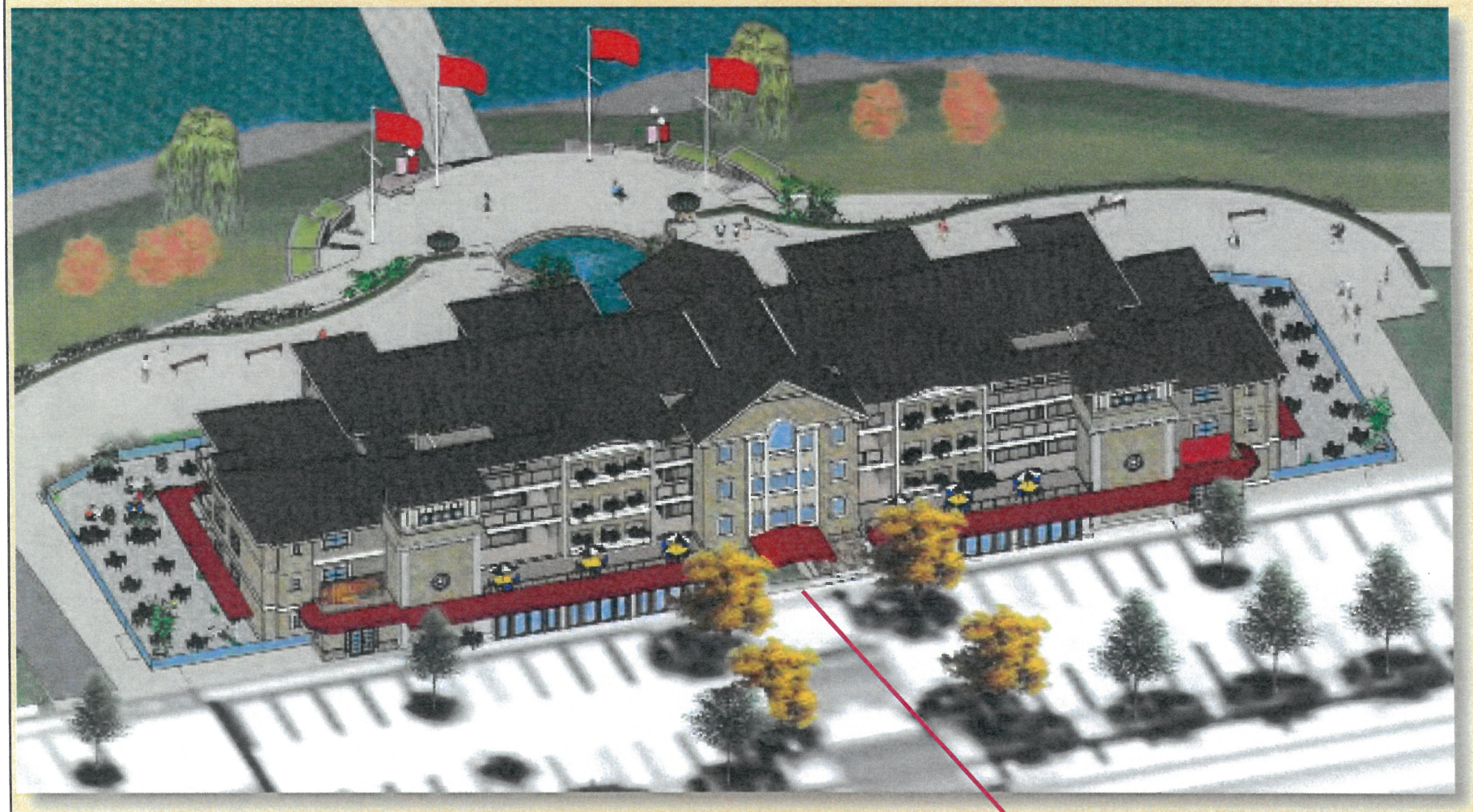


AERIAL WATERFRONT UNITS



THREE CENTER BLDGS- WATERFRONT

The Cove



PASS THROUGH ACCESS TO PUBLIC PLAZA - ESPLANADE - TRAILS

LOT 5 - TWO RESTAURANTS - LEASING - EXERCISE - POOL - PLAZA

The Cove




The Cove



STREET VIEW - LEFT SIDE OF LOT 5 - RESTAURANT

*The Cove*




WATERSIDE OF LOT 5 - PUBLIC PLAZA - RESTAURANTS - ESPLANDE

*The Cove*




CLOSE UP - LEFT SIDE OF PUBLIC PLAZA

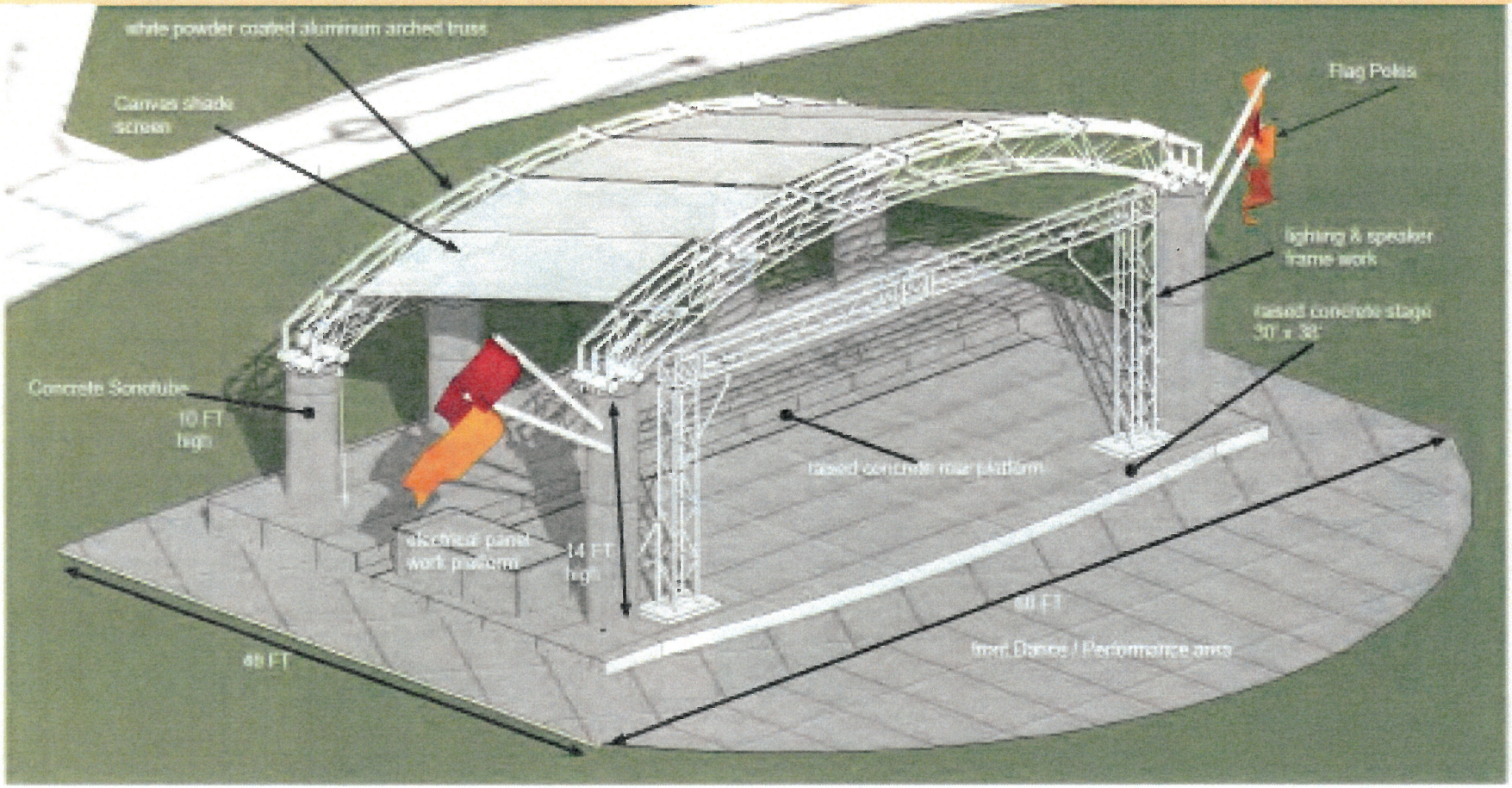



RESTAURANT ON RIGHT SIDE LOT 5



NORTH END OF ESPLANADE JUST SOUTH OF AMPHITHEATER

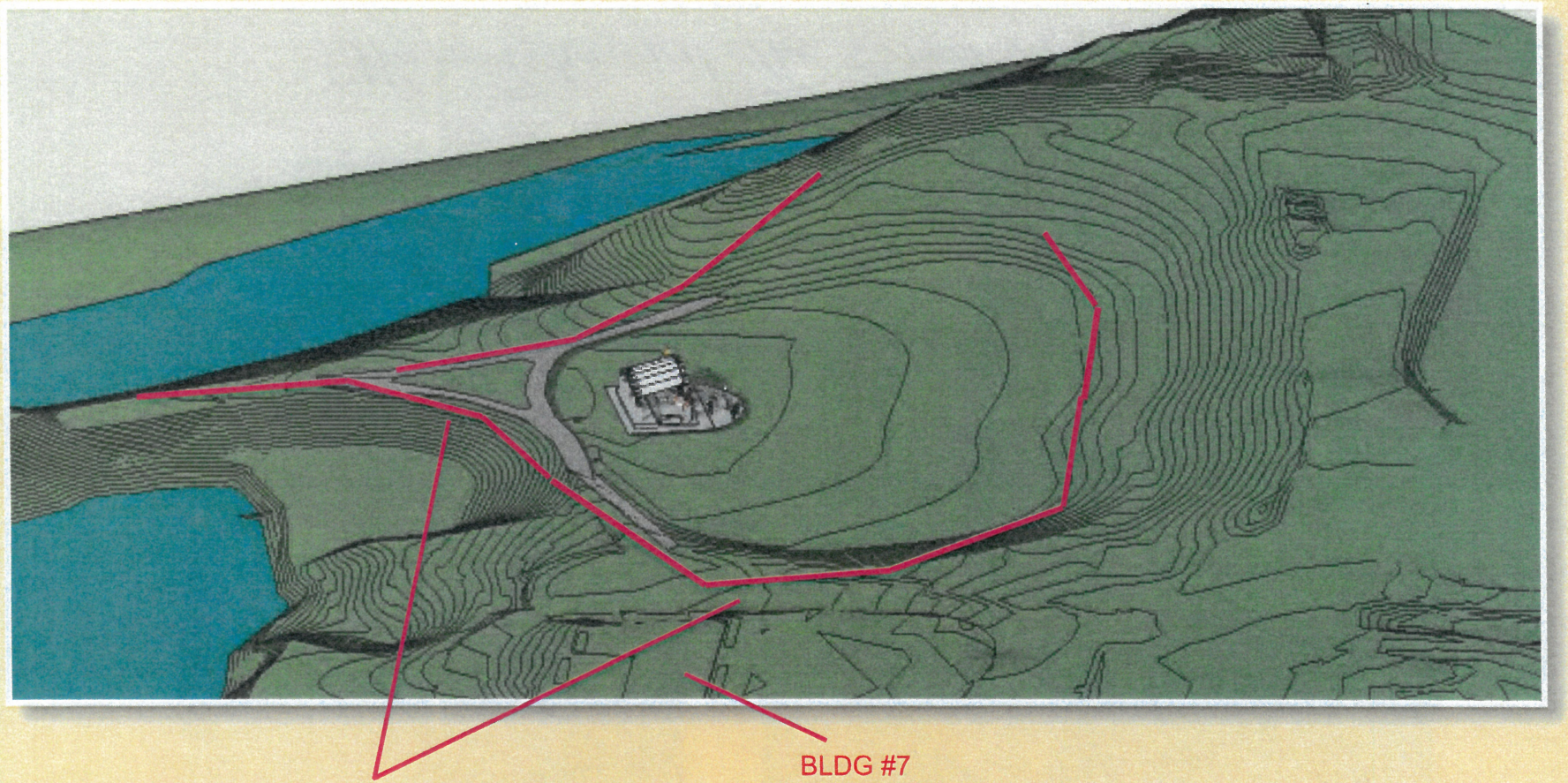
*The Cove*




AMPHITHEATER STAGE
CONCEPT MODEL - front view

NOTE: 1. Speakers and Lighting not included
2. Final design subject to formal shop drawings and final bid.

# AMPHITHEATER STAGE




AMPHITHEATER STAGE LOCATION - TRAIL SYSTEM



HABITAT RESTORATION & WATER QUALITY PRESERVATION







ECOSYSTEM PRESERVATION







STEWARDSHIP VALUES



CREATION OF NEW WETLAND HABITAT

*We've Changed The Environment*

*We've Made It Better*

# CITY OF OREGON CITY

**Staff Report**

625 Center Street
Oregon City, OR 97045
503-657-0891

**To:** Urban Renewal Commission **Agenda Date:** 07/19/2023

**From:** Executive Director Tony Konkol

## SUBJECT:

Urban Renewal Commission discussion of the Clackamette Cove properties

## STAFF RECOMMENDATION:

Staff recommends that the Urban Renewal Commission discuss the Clackamette Cove properties and provide directions to staff on how to proceed.

## EXECUTIVE SUMMARY:

The Clackamette Cove properties are owned by the Urban Renewal Agency. The properties in total are approximately 87 acres, zoned Mixed Use Downtown, and located in the 100-year flood plain. The URC requested information related to the last development proposal that was approved on the property, which occurred in 2018/2019. Attached to this staff report is information from the 2018/2019 application. There is a significant amount of additional information that can be provided as necessary to facilitate and inform the URC discussion.

## BACKGROUND:

The URC entered into a Disposition and Development Agreement with The Cove, LLC and based on the DDA, The Cove, LLC submitted a General Land Use application, Master Plan application and additional overlay applications, which were reviewed and approved by the Planning Commission on February 1, 2019.

The approved plan included eight structures with 404 apartment units, approximately 20 live-work units, approximately 11,000 square feet of retail, restaurant, or office space, vehicular and pedestrian infrastructure improvements, and shoreline enhancements.

Attachments to this staff report include a vicinity/property ownership map, conceptual building designs as submitted for the 2018/2019 land use application, and the land use approval history.

**OPTIONS:**

1. Provide staff direction on how to proceed.

# Figure 1: Site Aerial





# Residences at the Cove

Exhibit O Package

SHAPIRO / DIDWAY

# Perspective View

Main and Agnes






SHAPIRO / DIDWAY

# Perspective View

Main Street Building D



# Perspective View

Main Street Building D



# Perspective View

Main Street Building D



## Perspective View

Plaza / Esplanade



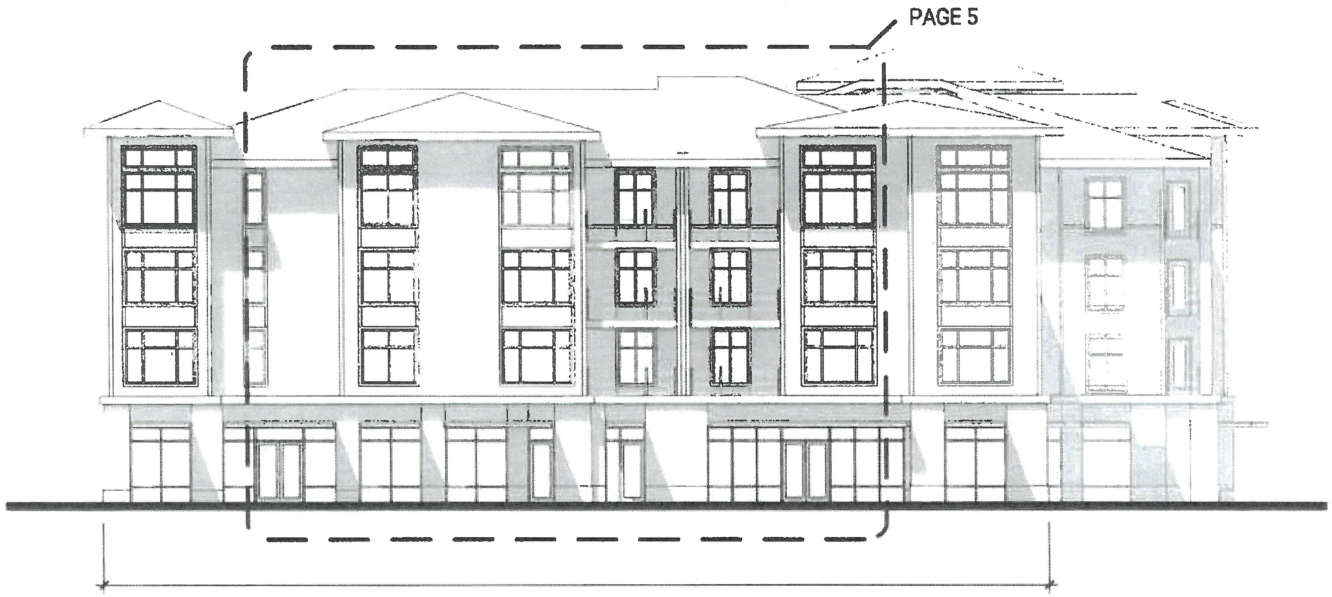
# Perspective View

Amenity Deck / Esplanade



# ELEVATIONS

BUILDING A1




GLAZING: 81'-4"
TOTAL WALL: 121'-8"

EAST ELEVATION – AGNES STREET
FOR REFERENCE ONLY
SCALE: 1/16" = 1'-0"

LRS ARCHITECTS 218256 | Residence At The Cove 12.11.2018

INCLUDED ELEVATIONS ARE NOT PART OF THIS SUBMITTAL AND ARE FOR REFERENCE ONLY.

THE COVE LLC

*EXHIBIT A / PAGE 1*

# ELEVATIONS

**BUILDING B1 PARTIAL - SOUTH**




GLAZING: 68'-4"
TOTAL WALL: 277'-0"

EAST ELEVATION – AGNES STREET
FOR REFERENCE ONLY
SCALE: 1/16" = 1'-0"

LRS ARCHITECTS 218256 | Residence At The Cove 12.11.2018

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THE COVE LLC

*EXHIBIT A | PAGE 2*

# ELEVATIONS

**BUILDING B1 PARTIAL - NORTH**



GLAZING: 68'-4"
TOTAL WALL: 277'-0"

EAST ELEVATION – AGNES STREET
FOR REFERENCE ONLY
SCALE: 1/16" = 1'-0"

LRS ARCHITECTS 218256 | Residence At The Cove 12.11.2018

INCLUDED ELEVATIONS ARE NOT PART OF THIS SUBMITTAL AND ARE FOR REFERENCE ONLY.

THE COVE LLC

*EXHIBIT A | PAGE 3*

# ELEVATIONS

BUILDING D1




SOUTH ELEVATION – MAIN STREET
FOR REFERENCE ONLY
SCALE: 1/16" = 1'-0"

LRS ARCHITECTS 218256 | Residence At The Cove 12.11.2018

INCLUDED ELEVATIONS ARE NOT PART OF THIS SUBMITTAL AND ARE FOR REFERENCE ONLY.

THE COVE LLC

EXHIBIT A | PAGE 4

# ENLARGED ELEVATIONS

**BUILDING A1**




EAST ELEVATION – AGNES STREET
FOR REFERENCE ONLY
SCALE: 1/8" = 1'-0"

LRS ARCHITECTS 218256 | Residence At The Cove 12.11.2018

INCLUDED ELEVATIONS ARE NOT PART OF THIS SUBMITTAL AND ARE FOR REFERENCE ONLY.

THE COVE LLC

*EXHIBIT A / PAGE 5*

# ENLARGED ELEVATIONS

**BUILDING B1**




EAST ELEVATION – AGNES STREET
FOR REFERENCE ONLY
SCALE: 1/8" = 1'-0"

GLAZING: 150 SQFT, TOTAL WALL: 348 SQFT
LINEAR GLAZING: 43 FT, TOTAL WALL: 82 FT

INCLUDED ELEVATIONS ARE NOT PART OF THIS SUBMITTAL AND ARE FOR REFERENCE ONLY.

# ENLARGED ELEVATIONS

BUILDING D1




SOUTH ELEVATION – MAIN STREET
FOR REFERENCE ONLY
SCALE: 1/8" = 1'-0"

GLAZING: 124 SQFT, TOTAL WALL: 375 SQFT
LINEAR GLAZING: 43 FT, TOTAL WALL: 93 FT

INCLUDED ELEVATIONS ARE NOT PART OF THIS SUBMITTAL AND ARE FOR REFERENCE ONLY.

APEX

December 19, 2017

Mr. David Mooney
The Cove, LLC
1961 Collingwood St. #212
Vancouver, BC V6R3K6

Re: Geologic Hazard Evaluation
OCMC Chapter 17.44 Geologic Hazards
The Cove Waterfront Development
Oregon City, Oregon
2367-00

Dear Mr. Mooney,

Apex Companies, LLC has prepared this letter to address specific requirements of the City of Oregon City Municipal Code (OCMC) with respect to Geologic and Geotechnical Hazards.

We have previously completed a number of geotechnical studies on the project site, related to past developments. We have recently completed a comprehensive geotechnical report for this project, entitled "Geotechnical Assessment, The Cove Waterfront Development, Oregon City, Oregon," and issued on December 19, 2017.

We have also reviewed the Grading Plans developed by Dowl Engineering for the Cove Waterfront project. The grading within the Cove uses 3H:1V slopes or flatter adjacent to the Cove with maximum slopes of 2H:1V elsewhere. The grading plans appear to be consistent with Apex's recommendations for grading, graded slopes and erosion control. These grading plans also appear to have been completed in significant compliance with the OCMC.

***Consistency of Documentation with City Requirements***

The requirements cited in the OCMC are summarized below.

16. Geologic Assessment Report
A preliminary engineering geologic assessment report, prepared by a suitably qualified and experienced engineering geologist who is registered in the state of Oregon and who derives his or her livelihood principally from that profession, containing a description of:
    a. Geologic formations, bedrock and surficial materials including artificial fill;
    b. Location of any faults, folds, etc.;
    c. Structural data including bedding, jointing, and shear zones;

17. Geotechnical Report
A geotechnical report demonstrating compliance with the Geologic Hazards Overlay District. The report(s) will be peer reviewed (OCMC 17.44.060 K, L) by the City's Geotechnical Engineer. Comments from the City's Geotechnical Engineer will be addressed by the applicant's engineering geologist and geotechnical engineer. Costs for City's geotechnical review and consultation shall be paid by the applicant. The report shall be prepared by a suitably qualified and experienced geotechnical engineer who is licensed in Oregon and who derives his or her livelihood principally from that profession, discussing:

a. Engineering feasibility of the proposed development and addressing strength properties of surface and subsurface soils with regard to stability of slopes
b. Appropriate types of foundations together with bearing values and settlement criteria for foundation design, soil erosion potential, permeability and infiltration rates
c. Excavation, filling and grading criteria including recommended final slopes
d. Surface and subsurface drainage
e. Planting and maintenance of slopes
f. Other identified soil or subsurface constraints together with geotechnical remediation and other recommendations to alleviate or minimize their effects
g. Signature and seal of the geotechnical engineer.
h. The report shall also contain a statement as to whether the proposed development, constructed in accordance with the recommended methods, is reasonably likely to be safe and prevent landslide or other damage to other properties over the long term, and whether any specific areas should not be disturbed by construction.

We have detailed in the following sections where the prepared documents meet the requirements of the code.

***a. Geologic formations, bedrock and surficial materials including artificial fill***

Geologic conditions as well as site specific materials are described in depth in Section 3.0 Geologic Setting and Section 4.0 Subsurface Conditions. Further, extensive subsurface exploration logs have been included in Appendix A.

***b. Location of any faults, folds, etc.;***

The seismic section of the report addresses the seismic setting of the project. No active or inactive faults have been mapped in or around the site.

***c. Structural data including bedding, jointing, and shear zones;***

This is addressed in the geologic setting portion of the report.

***a. Engineering feasibility of the proposed development and addressing strength properties of surface and subsurface soils with regard to stability of slopes***

Existing slopes that would trigger slope stability review are located on the banks of Clackamette Cove and various localized oversteepened fill piles throughout the development. Development along the Cove will result in significant flattening of the existing slopes (to 3H:1V or flatter) in accordance with our recommendations. Proposed finished slopes address geologic hazards associated with slopes.

***b. Appropriate types of foundations together with bearing values and settlement criteria for foundation design, soil erosion potential, permeability and infiltration rates***

Foundation design is addressed in Section 5.5 of the report. Erosion potential and control is discussed in Section 5.4. Due to the presence of random fill soils at the surface throughout the site, infiltration potential has not been tested.

***c. Excavation, filling and grading criteria including recommended final slopes***

The Geotechnical Report includes extensive grading recommendations in Section 5.1 and recommendations for finished cut and fill slope gradients in Section 5.2.

***d. Surface and subsurface drainage***

Drainage issues are addressed in throughout the report.

***e. Planting and maintenance of slopes***

The Erosion Control section of the report (Section 5.4) addresses planting and vegetation on slopes.

***f. Other identified soil or subsurface constraints together with geotechnical remediation and other recommendations to alleviate or minimize their effects***

A number of constraints are identified in the report including the presence of undocumented fills. These are addressed in the discussion section as well as the recommendations.

***g. Signature and seal of the geotechnical engineer.***

The Geotechnical Report was signed and sealed by Stuart Albright, P.E. who is registered in Oregon as a Geotechnical and a Civil Engineer.

***h. The report shall also contain a statement as to whether the proposed development, constructed in accordance with the recommended methods, is reasonably likely to be safe and prevent landslide or other damage to other properties over the long term, and whether any specific areas should not be disturbed by construction.***

The specific developments currently under consideration differ somewhat from what was anticipated at the time the report was written. However, based on our review of the current scheme, it is our opinion that the development is appropriate for the site and that landslide hazards have been adequately addressed.

***Geologic Hazards***

The City of Oregon City's Geologic Hazards Map indicates steep slopes and buffer zones developed from aerial photography interpretation. We have annotated each of the slope hazards by their source and provided a discussion of each.

**Stockpiles.** A number of large, temporary fill stockpiles are present throughout the site. These stockpiles were placed at their angle of repose and as such, feature steep sides that trigger the geologic hazard designation. The geologic hazards associated with stockpiles will be completely eliminated through removal. The stockpiles will be excavated and where appropriate, the materials will be placed as compacted, engineered fills.

**Cove Banks.** The banks of Clackemette Cove generally consist of granular fills that were dumped or pushed into the original quarry excavation in order to create upland. The banks generally raveled off into final slopes of approximately 1.5V:1H or steeper. Vegetation eventually established itself and the Cove banks have for decades been as found today for decades. This is in spite of periodic inundation such as during the 1996 floods. Over the past 10+ years during which Apex representatives have been associated the project, the banks have shown little to no evidence of sloughing or erosion. The steepness of the banks triggers the Geologic Hazard Designation.

Within the proposed grading for the Cove site, the banks are proposed to be graded to a finish slope of 3H:1V. The geologic hazards associated with the Cove slopes will be completely eliminated through the proposed grading.

The redevelopment of the Cove site will require providing a higher level of stability and also fill removal to offset fill placement elsewhere. As such, the Cove banks are proposed to be graded to a finish slope of 3H:1V. These slopes will be completed within the fill soils present which generally consist of sands and gravels with varying fill contents. The slopes will be subject to periodic inundation during extreme high water events. The banks of Clackamette Cove have stood at 1:5H to 1V for decades, in spite of periodic inundation such as during the 1996 floods. The current banks show no signs of instability or ongoing failures.

**Closure.** We hope that this letter meets your needs at this time. If you have any questions or need clarification, please contact me at your convenience.

Sincerely,




RENEWS: 12/31/19

Stuart Albright, P.E.
Principal Geotechnical Engineer

APEX

# *Geotechnical Assessment*
# *Cove Waterfront*
# *Oregon City, Oregon*

**Prepared for:**
**The Cove, LLC**

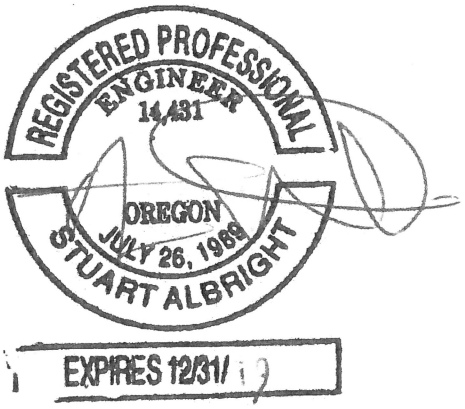
**December 19, 2017**
**2367-00**

APEX

# *Geotechnical Assessment*
# *Cove Waterfront*
# *Oregon City, Oregon*

**Prepared for:**
**The Cove, LLC**

**December 19, 2017**
**2367-00**




*Stu Albright, P.E.*
*Principal Engineer*

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2 Site Vicinity Plan


## Appendix


A Soil Boring Logs

# 1.0 Introduction and Limitations

This report presents Apex Companies, LLC's (Apex's) geologic assessment and geotechnical engineering evaluation and recommendations for the proposed Cove Waterfront development in Oregon City, Oregon (Figure 1). Our scope of work included a geologic site reconnaissance and numerous phases of subsurface explorations. Additional aspects of our work scope included a site vicinity geologic reference review, as well as the preparation of this report.

The work was performed for the exclusive use of The Cove, LLC for specific geotechnical-related application to this project. This work was conducted in accordance with generally accepted professional practices in the same or similar localities related to the nature of the work accomplished, at the time the services were performed. No other warranty, express or implied, is made.

# 2.0 Site Description and Project Understanding

**Site Description.** The Clackamette Cove site is located in Oregon City, Oregon in the area generally bounded by Highway 99E on the west, the Clackamas River on the north, the old Rossman Landfill and Tri-Cities Wastewater Treatment Plant on the east, and Main Street on the south. It consists of the tax lots that surround and totally contain Clackamette Cove.

The overall topography of the Site is relatively flat, although steep slopes surround Clackamette Cove. Lot 1 is southwest of Clackamette Cove and mostly vacant, with the exception of a series of stockpiles placed by the Oregon City Department of Public Works. Lots 3 through 7 are east of Clackamette Cove and are vacant, with the exception of a small single-story building used by the Clackamas County Sherriff for equipment storage an apparently inactive truck scale, left over from historical activities at the site, and a paved pathway. Figure 2 shows a plan view of the Site.

The Site is located southeast of the confluence of the Clackamas River and the Willamette River. Oregon Highway 99 runs in a north-south alignment west of the Site, and Oregon Highway 205 runs in a north-south alignment east of the Site. Residential property is north of the Site; industrial properties, including the Tri-Cities Service District wastewater treatment plant, are east of the Site; retail-commercial property (the Oregon City Mall) is south of the Site; and Clackamas Cove, a pedestrian pathway, and open undeveloped land is west of the Site.

Clackamette Cove is a former sand/gravel mining pit that is now connected to the Clackamas River. The Clackamette Cove area was undeveloped and used for agricultural purposes through the early 1950s. From the mid-1950s through 1986, the property was used for mining sand and gravel and manufacturing asphalt concrete. Since 1986, the property has been generally undeveloped. The eastern portion of the site was

previously in use as a railroad right-of-way. East of the railroad, the site was used for an unlined municipal waste landfill (Rossman Landfill).

**Project Understanding.** Although the final development details may change somewhat, the overall development scheme and site work needs have been identified at this time. As we understand it, the overall approach to site development includes excavation of the lake front to soften grades at the waterfront with filling on the eastern half of the site. We understand that the project will include construction of a mixed-use development featuring apartments, and commercial parcels as well as the installation of services, parking areas, and access drives.

The project will feature a significant amount of roadway construction including the development of a new City Street, Agnes Avenue, and an emergency access roadway called the Agnes Extension.

We anticipate that structural loading will be moderate, with wall loads not exceeding 5 kips per lineal foot (Klf) and column loads of less than 450 kips.

# 3.0 Geologic Setting

## 3.1 Site Geologic Conditions

**Geology.** The Clackamette Cove area lies at the confluence of the Clackamas River and the Willamette River. The geology in the vicinity of the Site is composed of fluvial sediments, including Quaternary alluvium overlying the Troutdale Formation (Miocene to Pliocene age). The local basement rock underlying the Troutdale Formation is the Columbia River Basalt (CRB).

Quaternary alluvium consists of approximately 40 to 60 feet of gravel and sand, interbedded with silt lenses. These deposits were mined for aggregate, creating Clackamette Cove. The Troutdale Formation is composed of semi-impermeable clay overlying a lower sandy conglomerate interbedded with the Sandy River Mudstone. The CRB is a series of lava flows or flood basalts.

**Hydrogeology.** A shallow, unconfined alluvial aquifer is present within the Quaternary alluvium. The alluvial aquifer is separated from a deeper aquifer in the CRB by approximately 120 feet of low permeability, fine-grained deposits (GRI, 1991). A network of groundwater monitoring wells was installed as part of numerous studies of impacts from the Rossman Landfill. The regional groundwater flow direction in the shallow alluvial aquifer is generally to toward the confluence of the Clackamas and Willamette Rivers.

Water levels beneath the site vary seasonally in direct response to changes in river flows. Groundwater levels are likely to vary seasonally.

**Area Seismicity.** The seismicity of Oregon City, and hence the potential for ground shaking, is controlled by three separate fault mechanisms. These include the Cascadia Subduction Zone (CSZ), the mid-depth intraplate zone, and the relatively shallow crustal zone. Descriptions of these potential earthquake sources are presented below.

The CSZ is located offshore and extends from Northern California to British Columbia. Within this zone, the oceanic Juan De Fuca Plate is being subducted beneath the continental North American Plate to the east. The interface between these two plates is located at a depth of approximately 15 to 20 kilometers (km). The seismicity of the CSZ is subject to several uncertainties, including the maximum earthquake moment magnitude (Mw) and the recurrence intervals associated with various Mw earthquakes. (Moment magnitude is used by seismologists to measure larger earthquakes and is based on fault displacement and area of fault rupture, while for smaller earthquakes the moment magnitude is approximately equal to the familiar Richter Scale Magnitude.) Anecdotal evidence of previous CSZ earthquakes has been observed within coastal marshes along the Oregon coast. Sequences of interlayered peat and sands have been interpreted to be the result of large subduction zone earthquakes occurring at intervals on the order of 300 to 500 years, with the most recent event taking place approximately 300 years ago. A definitive study of Oregon seismic hazards completed by Geomatrix (1995) suggests that the maximum earthquake associated with the CSZ is Mw 8 to 9. This is based on an empirical expression relating Mw to the area of fault rupture derived from earthquakes that have occurred within subduction zones in other parts of the world. An Mw 9 earthquake would involve a rupture of the entire CSZ. As discussed by Geomatrix (1995), this has not occurred in other subduction zones that have exhibited much higher levels of historical seismicity than the CSZ and is considered unlikely. For the purpose of this study, an earthquake of Mw 8.5 was assumed to occur within the CSZ.

The intraplate zone encompasses the portion of the subducting Juan De Fuca Plate located at a depth of approximately 30 to 50 km below western Oregon. Very low levels of seismicity have been observed within the intraplate zone in Oregon. However, much higher levels of seismicity within this zone have been recorded in Washington and California. Several reasons for this seismic quiescence were suggested in the Geomatrix (1995) study and include changes in the direction of subduction between Oregon and British Columbia as well as the effects of volcanic activity along the Cascade Range. Historical activity associated with the intraplate zone includes the 1949 Olympia Mw 7.1 and the 1965 Puget Sound Mw 6.5 earthquakes. Based on the data presented within the Geomatrix (1995) report, an earthquake of Mw 7.25 has been chosen to represent the seismic potential of the intraplate zone.

The third source of regional seismicity that can result in ground shaking is near-surface crustal earthquakes occurring within the North American Plate. The historical seismicity of crustal earthquakes in western Oregon is higher than the seismicity associated with the CSZ and the intraplate zone. The 1993 Scotts Mills (Mw 5.6) and Klamath Falls (Mw 6.0) earthquakes were crustal earthquakes.

## 3.2 Site Seismic Soil Coefficient and Ground Shaking

**IBC Seismic Design Parameters.** The site coefficient was determined based on the International Building Code (IBC) Section 1615.1.5. The subsurface shear wave velocity profile is based upon correlations developed for normalized SPT blow counts. The site subsurface conditions have been modeled as consisting of surface fills overlying native silt to a depth of 20 feet below the ground surface (bgs) and very dense cobbles and gravels at depths from 20 feet bgs to 50 feet bgs. Below 50 feet bgs, we have assumed that the Eocene- to Oligocene-aged Marine Sedimentary bedrock contact is present. Shear wave velocity based upon correlation to normalized SPT blow counts was in excess of 650 feet per second. While our borings only extended to a maximum depth of 30 feet bgs, based upon review of near-vicinity geologic studies for the project site area, we estimate that this dense gravel unit underlying the site extends to depths in excess of 100 feet bgs.

We recommend that the seismic design of the building utilize the IBC site soil classification "D". A site classification of "D" equates to a moderately stiff to stiff soil profile.

## 3.3 Liquefaction

The potential for soil liquefaction during seismic ground shaking is generally associated with loose, saturated, non-plastic sands and some very soft, recently deposited silt soils. The soils present on this site that are located below the seasonal groundwater table consist of dense or very dense gravels. This type of subsurface profile is not typically associated with liquefaction issues.

A liquefaction assessment was conducted in accordance with the 26th Annual ASCE Geotechnical Seminar, April 30, 2003 "Recent Advances in Soil Liquefaction Engineering, A Unified And Consistent Framework" by R.B. Seed et al. The Seed et al. methodology developed for liquefaction susceptibility based upon standard penetration testing was employed. The soil profile assumed for our model is detailed in the above section regarding Site Seismic Soil Coefficient. Based upon our understanding of the site subsurface conditions, we estimate the probability of soil liquefaction beneath the project site to be very low.

## 3.4 Fault Displacement and Subsidence

There are no mapped faults in the near vicinity of the project site. It is our opinion that the potential for on-site fault displacement and associated ground rupture is remote.

## 3.5 Dynamic Landslides

The current slopes adjacent to the Cove are oversteepened and in places, overhanging. Those slopes are susceptible to static failure and would be particularly susceptible to failure during a seismic event. The project plans call for regrading those slopes with 3H:1V slopes. Such slopes would be stable during a

design seismic event. We therefore estimate that the potential for post-development dynamic landsliding is very low.

### 3.6 Tsunami

There is no potential for tsunami at the site due to the site's elevation and distance from coastal areas.

## 4.0 Subsurface Conditions

Numerous phases of field explorations have been undertaken from 2006 to 2017. Past explorations consisted of 30 backhoe and trackhoe test pits excavated throughout the site. Those explorations were supplemented in 2017 by 11 drilled borings. The approximate locations of the explorations are indicated on the accompanying site plan (Figure 2). In addition to the geotechnical explorations completed for the project development, more than 50 past environmental explorations have been completed across the site. Subsurface conditions encountered during field explorations are described below.

**Topsoil.** Soils near the ground surface generally consist of imported, mineral fill soils with little to no organics. As such, the development of topsoil over the past 20 to 30 years has been minimal except adjacent to trees. The upper 2 to 6 inches of the site may contain sufficient organics to require stripping from structural areas. This material should be stripped during initial site work. Topsoil strippings should not be reemployed as structural fill, but can potentially be reused in landscaping areas.

**Fill.** The entire site has been previously filled. The fills generally consist of a mix of silts, sands, and gravels with some boulders. Large slabs of concrete and other debris were encountered at depth throughout the site. Although some organic material including sticks and branches has been encountered in the explorations, the occurrences were generally random and widely spread. Significant deposits of topsoil, stripping, and/or refuse have not been encountered within the fill. This is consistent with the site history wherein the site fills would have been placed under the control of the quarry operators.

**Native Sandy Silt.** The majority of the test pits excavated for this project terminated in fills. Boring logs for deeper explorations indicate that the shallow, native soils (where encountered) consist of sandy silts. These soils are generally encountered as stiff to hard. For the majority of the site, these soils were removed during site quarrying.

**Dense Troutdale Gravels.** The fills and sandy silts (where encountered) are underlain at depths of 20 to 25 feet below the ground surface by dense to very dense, partially cemented, gravels with varying amounts of silts, sands, and cobbles.

**Groundwater.** The static groundwater table was not observed in any of our exploratory test pits. Previous work in the area by environmental consultants indicates that the groundwater table is controlled by the water

levels in the Cove. Generally, the water table is located below the surface of the dense gravels which is consistent with the site history where quarrying was stopped above the cove level. Shallow, perched water is anticipated throughout the site during prolonged wet weather.

# 5.0 Conclusions and Recommendations

The presence of variable fill throughout the site will have the most significant impact on the future development. The majority of the fills encountered consisted of mineral soils or inert materials. However, the consistency of the fills is highly variable. Without treatment, the variability would inevitably result in differential and unpredictable foundation settlement.

In working with the design team, we evaluated a number of options for foundation support. Although we considered deep foundations, installation would encounter frequent boulders and concrete and be impractical. We considered a variety of options for support that would involve a combination of site improvement and foundation stiffening. The most cost-effective solution, and one that will be a compromise between future settlement potential and practicality. The approach consists of densifying the upper surface of the site, placing densified crushed rock, and tying the foundation elements together with grade beams. That approach has ultimately been selected by the project team.

## 5.1 Grading Recommendations

We have provided recommendations for wet weather and dry weather construction as well as other geotechnical concerns and issues relative to the project site. Because of the potential for the presence of erosion- and moisture-sensitive near-surface fill soils, Apex recommends that site grading and utility trenching be conducted during extended periods of relatively dry weather conditions. If wet weather construction is attempted, development costs may be significantly higher due in part to the increased cost of imported granular fill, maintenance of soft subgrade areas generated as a result of construction activities, and installation of a granular working blanket over construction-trafficked portions of the site.

**Removal of Old Concrete, Old Fills, and Other Buried Features.** In general, the fills encountered during our explorations consisted of relatively dense, non-organic soils with limited quantities of debris. Given the developed nature of the site, old foundations and concrete slabs may be encountered during site preparation and grading. Our borings were advanced in discrete locations across widely spaced intervals and variation was noted between the fill soils encountered; therefore, it is possible that organic fills or other unsuitable material could also be encountered. Landscaping, organic soils, and other unsuitable fills should be removed from building and pavement areas as encountered. Further, all fill soils should be removed from beneath foundation bearing areas. Overexcavated areas should be backfilled with compacted structural fill. Old utilities and structural features associated with past developments such as footings, retaining walls, etc., should be removed during initial site work. Removal of such features can be limited to areas that will function as foundation subgrade for the new structure. Failure to remove these features can

result in additional settlement or other issues within new structures and pavements. For other areas of the site, such improvements can be removed as they are encountered and conflict with proposed improvements. We would generally recommend that the improvements be removed to a depth of 2 feet below planned surface improvements. If encountered, any vaults or basement structures encountered should be perforated to allow for drainage and subsequently filled with structural fill.

**Building Pad Recompaction.** Prior to commencing development of structures, we recommend that the building pads and a zone 20 feet outside of the structures horizontally be recompacted using a large (greater than 40 kip weight) surface roller with vibratory compaction. Studies have shown that the effectiveness of vibratory rollers generally increases significantly with each overlapping pass up to a maximum of approximately seven where returns diminish significantly. Further, studies show measurable densification to depths of six feet or more with repeated passes of a large roller.

After rough grading but prior to recompaction, the upper three feet of material should be overexcavated. The resulting subgrade should be visually evaluated and proof rolled with a with a loaded 10- to 12-yard dump truck or other suitable equipment. Any areas of subgrade that pump, weave, or contain obvious debris should be overexcavated and backfilled with clean material from on site

The exposed site surface should then be recompacted through a minimum of seven passes of a vibratory roller of at least 40,000 pounds in weight. As with the proofroll, any areas that roll or pump should be overexcavated and backfilled with select on-site material.

**Wet Weather Construction.** Ideally, construction would be scheduled to occur during summer months when extended periods of warm, dry weather are typical. This will minimize the impacts of rain and wet soil conditions on construction.

If wet weather construction is conducted, it is recommended that all haul roads be armored with 12 to 18 inches of imported gravel fill. All structural fill material placed during wet weather construction should consist of imported granular fill. The import fill should contain less than 5 to 8 percent fines content by weight.

Measures to ensure stormwater runoff does not enter trenches and excavations will be required during wet weather construction. In addition, the potential for presence of groundwater seeps during winter months may necessitate dewatering within trenches and excavations.

**Compaction Recommendations.** Structural fills should be installed on a subgrade that has been prepared in accordance with the above recommendations. Fills should be installed in horizontal lifts not exceeding 8 inches in thickness (loose—prior to compaction), and should be compacted to at least 92 percent of the maximum dry density for fine-grained native soils. The maximum dry densities should be determined in accordance with ASTM D 1557 (Modified Proctor Test). The compaction criteria may be reduced to

85 percent in non-structural landscape or planter areas. Fills placed over ground that slopes in excess of 3H:1V should be keyed and benched into firm soils beneath all topsoil and tree or brush roots.

A summary of recommended compaction specifications is provided in the following table.

**Recommended Fill Compaction Specifications**

| Material | Percent of Maximum Dry Density ASTM D 1557 |
|---|---|
| Structural Fill and Trench Backfill | 92 |
| Landscaping Fill | 85 |
| Base Rock for Slabs and Pavements | 95 |

**Structural Fills During Summer Grading.** During dry weather, structural fills may consist of virtually any well-graded soil that is free of debris, organic matter, and high percentages of clay or clay lumps, and that can be compacted to the preceding specifications. However, if excess moisture causes the fill to pump or weave, those areas should be dried and re-compacted, or removed and backfilled with compacted granular fill. In order to achieve adequate compaction during wet weather, or if proper moisture content cannot be achieved by drying, we recommend that fills consist of well-graded granular soils (sand or sand and gravel) that do not contain more than 5 percent material by weight passing the No. 200 sieve. In addition, it is usually desirable to limit this material to a maximum 6 inches in diameter for ease of compaction and future installation of utilities.

## 5.2 Finished Cut and Fill Slopes

Although steeper rock slopes may be feasible for portions of the site, we recommend that upland finished cut and fill slopes not exceed gradients of 2H:1V. Slopes that are subject to inundation, such as those that intersect the Cove) should be finished at cut slopes that do not exceed 3H:1V. Cut and fill slopes should be protected immediately from erosion following completion of grading. Erosion protection should consist of placement of jute mesh and seeding with erosion-resistant vegetation or other engineer-approved erosion control methods.

## 5.3 Excavations

Subsurface conditions encountered during the site investigation indicate that precautions in utility excavations will be required due to the potential for caving/sloughing. Any excavations deeper than 4 feet should be sloped or shored in accordance with Occupational Safety and Health Act (OSHA) regulations. Normally, shoring systems (for excavations less than 20 feet in depth) are contractor-designed and -installed items.

## 5.4 Erosion Control

We recommend that finished cut and fill slopes be protected immediately following grading with vegetation, gravel, or other approved erosion control methods. Water should not be allowed to flow over slope faces or drop from outfalls but should be collected and routed to stormwater disposal systems. Riprap, gabion baskets, or similar erosion control methods may be necessary at stormwater outfalls or to reduce water velocity in ditches. Silt fences should be established and maintained throughout the construction period. Silt fence barriers should be established downslope from all construction areas to protect natural drainage channels from erosion and/or siltation. In order to decrease erosion potential, care should be taken to maintain native vegetation and organic soil cover over as much of the site as possible.

## 5.5 Foundation Support

For the purpose of our initial foundation assessments we have assumed that the proposed structure/structures will be five stories or less, and that column loads will not exceed maximum factored loads of about 450 kips, and factored loads for continuous wall footing will not exceed 5 Klf. If structural loading exceeds the above assumptions by greater than 20 percent, Apex should be informed in order to re-assess the validity of our foundation recommendations.

Under the current development scheme, the project is proposed to feature spread footings that would bear within five feet of the existing ground surface. Unfortunately, some 15 to 20 feet old fill will still be in place under the foundations. Our recommendations for foundations assume that the building pads will be recompacted in accordance with our site preparation recommendations and that the structures will be underlain by a minimum of three feet of compacted granular fill.

**Spread Footings.** For spread footings established on recompacted fills and a granular fill pad as previously described, the foundations can be designed for an allowable bearing capacity of 2.5 kips per square foot (Ksf). We estimate that foundations designed in accordance with the above recommendations will experience less than 2 inches of total settlement and less than 1 inch of differential settlement between adjacent foundation elements. In order to even out such movements throughout the structure, we recommend connecting adjacent foundations through grade beams.

For sliding resistance, the native soils underlying spread footings can be assumed to have an ultimate coefficient of friction of 0.40. Passive soil pressure can be developed along the sides of footings if granular backfill is used around footings and the backfill is compacted to at least 95 percent of the material's maximum dry density as determined by ASTM D-1557 testing. An equivalent passive fluid weight of 350 pcf can be used for resistance against sliding.

Minimum allowable foundation size and minimum allowable foundation embedment depth should comply with IBC requirements.

The sliding coefficient, allowable bearing, and passive soil resistance may each be increased by 1/3 for short-term, temporary loading conditions such as high wind or seismic shaking.

**Site Work Observation and Inspection.** With any of the above described approaches to foundation support, we recommend that Apex be involved closely with the project general contractor and earth work contractor or pier contractor during initial site work and preparation of foundation subgrade areas. All structural fill placement and compaction should be monitored routinely with regular density testing conducted and documented.

## 5.6 Slabs on Grade and Vapor Retarders for Finished Areas

For slab-on-grade construction, we recommend installation of at least 6 inches of clean crushed rock or a clean gravel section between the bottom of the slab, and subgrade. For the gravel to be defined as "clean", it should contain less than 6 or 7 percent fines by weight passing a standard No. 200 sieve.

We would normally recommend the use of a vapor retarder between the slab and the subgrade soils. The vapor retarder discussion is rendered moot by the need to provide methane collection and venting as well as radon collection and venting under the slabs.

## 5.7 Retaining Structures

We have prepared lateral pressure recommendations for restrained and unrestrained walls. The loads and pressures developed from these recommendations are our best estimate of actual loads that may develop and do not contain a factor of safety. The recommendations assume that the retaining wall backfill material will consist of clean, durable, well-drained granular backfill as described in the Structural Fill Section of this report. If traffic loads are expected within a horizontal distance from the top of the wall equal to the wall height, a surcharge equivalent to an additional 2 feet of backfill height should be added to earth loads acting on the wall. Retaining wall pressures are assumed to act horizontally (normal to the wall), based on the practice of installing drainage membranes or impervious wall coatings that prevent friction between the wall and backfill.

**Non-Restrained Walls.** Non-restrained walls have no restraint at the top and are free to rotate about their base during backfilling. Most cantilever retaining walls fall into this category. We recommend that non-restrained walls be designed for pressures developed from the equivalent fluid weights shown in the following table.

**Non-Restrained Retaining Wall Pressure Design Recommendations**

| Backfill Slope Horizontal/Vertical | Equivalent Fluid Weight (pounds per cubic foot) |
|---|---|
| Level | 35 |
| 3H:1V | 45 |
| 2H:1V | 85 |

**Restrained Walls.** Restrained walls are any walls that are prevented from rotation during backfilling. Walls with corners and jogs and those that are restrained by a floor slab, floor diaphragm, and/or roof fall into the category of restrained walls. We recommend that restrained walls be designed for pressures developed from the equivalent fluid weights shown in the following table.

**Restrained Retaining Wall Pressure Design Recommendations**

| Backfill Slope Horizontal/Vertical | Equivalent Fluid Weight (pounds per cubic foot) |
|---|---|
| Level | 55 |
| 3H:1V | 65 |
| 2H:1V | 105 |

**Seismic Lateral Earth Pressure.** Lateral earth pressure acting on retaining walls should be increased to account for seismic loadings. We have prepared recommendations for seismic lateral earth pressures on non-restrained walls in accordance with the Mononobe-Okabe methodology. The peak ground acceleration used in preparing these recommendations was developed based on SDs/2.5 in accordance with the OSSC. Recent research indicates that for peak ground acceleration values less than 0.4g, seismic earth pressure can be ignored. However, we recommend utilizing the accepted practice of calculating the load based on one half of the peak ground acceleration for even low levels of site shaking.

The Mononobe-Okabe methodology was developed for non-restrained walls. Recent research indicates that at-rest (restrained) walls may not be subject to any load increases during seismic events. Further, methodologies for evaluating the loading on restrained walls are known to be quite conservative and as such, the factors of safety have been shown to more than address the seismic loading on restrained walls.

Seismic Earth Pressures may be approximated by a uniformly distributed rectangular pressure which is applied over the entire back of the wall. "H" represents the height of the wall in feet. The resultant force acts at a distance approximately 0.6H above the base of the wall.

**Unrestrained Wall Seismic Surcharge Design Pressure Recommendations**

| Design Condition | Seismic Pressure Surcharge (pounds per square foot) |
|---|---|
| Seismic Active Earth Pressure (Unrestrained) | 7H |

These pressures represent our best estimate of actual pressures that may develop and do not contain a factor of safety. These pressures assume retaining wall backfill material is well-drained.

**Retaining Wall Backfill.** The backfill behind and within 4 feet of the retaining walls should consist of free-draining granular material and should meet recommended specifications provided in the Suitable Fill section of this report.

**Mechanically-Stabilized Earth Walls.** Mechanically-stabilized earth (MSE) retaining wall backfills should consist of clean, granular soils (i.e., sand, gravels, crushed rock). MSE walls require high-quality backfill for durability, good drainage, constructability, and good soil reinforcement interaction. These characteristics can be obtained from well-graded granular materials. MSE systems depend on friction between the reinforcing elements and the soil. In such cases, a material with high friction characteristics is specified and required. Some systems rely on passive pressure on reinforcing elements and, in those cases, the quality of backfill is still critical. These performance requirements generally eliminate predominantly fine-grained soils, particularly soils with high clay content.

Recommended soil strength parameters for use in the reinforced retaining wall design are summarized in the following tables. Soil cohesion should be assumed as zero.

**MSE Backfill, Soil Strength Design Recommendations**

| Backfill Type | Design Friction Angle (Φ) | Moist Soil Unit Weight (γ) | Active Lateral Earth Pressure Coefficient[2] | At-Rest Lateral Earth Pressure Coefficient[3] |
|---|---|---|---|---|
| Select Borrow, Imported Clean Sand[1] | 34 degrees | 120 pcf | 0.28 | 0.44 |
| Crushed Rock | 40 degrees | 135 pcf | 0.22 | 0.36 |

**MSE Backfill, Active and At-Rest Earth Pressure Coefficients for Sloping Backfill**

| Backfill Type | Active Earth Pressure Coefficient 3:1 Backslope | At-Rest Earth Pressure Coefficient 3:1 Backslope | Active Earth Pressure Coefficient 2:1 Backslope | At-Rest Earth Pressure Coefficient 2:1 Backslope |
|---|---|---|---|---|
| Select Borrow, Imported Clean Sand[1] | 0.33 | 0.49 | 0.41 | 0.57 |

| Backfill Type | Active Earth Pressure Coefficient 3:1 Backslope | At-Rest Earth Pressure Coefficient 3:1 Backslope | Active Earth Pressure Coefficient 2:1 Backslope | At-Rest Earth Pressure Coefficient 2:1 Backslope |
|---|---|---|---|---|
| Crushed Rock | 0.30 | 0.45 | 0.36 | 0.51 |
| WSDOT Gravel Backfill for Walls | 0.24 | 0.38 | 0.28 | 0.42 |

***Notes:***

1. Select Borrow, Imported Clean Sand: The sand should contain less than 9 percent or 10 percent fines by weight passing a standard No. 200 sieve.
2. Coulomb Active Lateral Earth Pressure with wall friction. The value assumes level backfill.
3. At-Rest Earth Pressure, Ko = 1-sin(Φ). The value assumes level backfill.

**Traffic Surcharging Loads.** If traffic loads are expected within a horizontal distance from the top of the wall equal to the wall height, a uniform lateral earth pressure acting horizontally on reinforced walls equal to 60 psf should be added to earth loads acting on the wall.

**External and Global MSE Wall Stability.** MSE wall stability should be determined for overturning, bearing, and sliding stability. Appropriate factors of safety should be utilized in design. The following soil parameters should be employed in external stability checks.

**MSE Wall External Stability, Soil Design Parameters**

| Parameter | Symbol | Units | Value |
|---|---|---|---|
| **WSDOT Gravel Backfill for Retaining Walls** | | | |
| Backfill Soil Unit Weight | γ | pcf | See Table 4 |
| Backfill Soil Friction Angle | Φ | degrees | See Table 4 |
| Active Lateral Earth Pressure Coefficient (Coulomb with wall friction) | Ka | -- | See Tables 4 & 5 |
| At-Rest Lateral Earth Pressure Coefficient (Ko = 1-sin(Φ) | Ko | -- | See Tables 4 & 5 |
| **In-place Soils at Foundation Grade** | | | |
| Foundation Soil Friction Angle | φ | degrees | 28 |
| Foundation Soil Unit Weight | γ | pcf | 120 |
| Base Sliding Coefficient (Ultimate) | d | -- | 0.34 |
| Allowable Bearing Capacity for footing embedded a minimum of 3 feet | $q_{all}$ | Ksf | 2 [2.] |
| Allowable Bearing Capacity for footing embedded a minimum of 6 feet | $q_{all}$ | Ksf | 4 [3.] |
| Passive Lateral Earth Pressure Coefficient | kp | -- | 2.77 |

***Notes:***

1. Ksf = Kips per square foot.
2. The bottom of footing is a minimum of 3 feet below all adjacent grades.
3. The bottom of footing is a minimum of 6 feet below all adjacent grades.

**MSE Wall Foundation Embedment.** To reduce long-term MSE wall stability issues associated with sloughing of existing slopes, we recommend that the toe of the MSE wall be embedded. The forward edge (toe) of wall should be set back a horizontal distance from the face of the slope a minimum of the height of the slope divided by two (H / 2).

**Total and Differential Settlement Estimate.** For MSE backfill heights of 15 feet or less in which foundations are embedded a minimum of 3 feet below all surrounding grades, our estimated total settlement is less than 2 inches. Differential settlement over either a 50-foot section or 100-foot section of MSE wall is estimated to be less than 1 inch.

**Suitable Fill Materials.** Backfill selection should be based on the ability of the material to drain and the drainage design developed for MSE walls. Weather conditions will also affect the ability to place and properly compact fill materials utilized in MSE wall construction. Additionally, for MSE walls and reinforced slopes, the susceptibility of the backfill reinforcement to damage due to placement and compaction of backfill on the soil reinforcement should be taken into account with regard to backfill selection.

**Additional Design Considerations.** Utility trenching should not be conducted in the reinforced zone of MSE walls. Trenching will invariably cut through reinforcement layers within the wall zone and undermine wall stability.

## 5.8 Pavements

The following recommendations for parking lot pavements and access driveways are specific to non-public right-of-way areas. Our designs assume that the subgrade within 8 inches of the bottom of the pavement section will be compacted to 95 percent of the material's maximum dry density in accordance with ASTM D 1557 (Modified Proctor) testing. If the road subgrade is not re-compacted to a uniform density and stiffness, the gravel base will have to be increased significantly. If re-compaction of the subgrade is not conducted, the gravel base thickness should be increased by 50 percent from those thicknesses indicated in the following table.

Specifications for pavements, base course, and sub-base should conform to Oregon Department of Transportation (ODOT) specifications. Our pavement design sections are provided in the following table.

**Flexible Asphalt Concrete Pavement Design**

| Approximate Number of Trucks | Equivalent Single Axle Loads (ESALs x 1000) | Asphalt Concrete Thickness (inches) | Base Rock Thickness (inches) |
|---|---|---|---|
| Auto parking | 10 | 2.5 | 10 |
| 6 | 25 | 3 | 10 |
| 15 | 66 | 3.5 | 11 |

Intermediate truck loading conditions and the resultant asphalt concrete and base rock sections can be interpolated from the above table. These designs are intended for use on private streets. Construction traffic should be limited to unpaved and untreated roadways, or specially constructed haul roads. If this is not possible, the pavement design selected from the above table should include an allowance for construction traffic.

## 5.9 Agnes Avenue

Agnes Road is planned to be developed as a City street in accordance with the requirements of the City of Oregon City. In general, the Agnes Road alignment follows the old railroad right-of-way that previously formed the east boundary of the Clackamette Cove quarry site. The railroad right-of-way predates the quarry by decades and was generally filled above adjacent grades (to avoid flooding).

We completed a series of five borings within the Agnes Avenue right-of-way. Shallow soils, likely subgrade soils, encountered consisted generally of dense gravel fills associated with past railroad and roadway development. Portions of the right-of-way have been filled over with sand and silt fills. It is possible that remnants of track and ties could be found at depth, although none were seen within our borings.

The pavement subgrade resilient modulus ($M_R$) was developed from correlation with soil types present throughout the corridor. The soils present at subgrade throughout the area generally consist of sandy silt and sand fills. Based on our experience, we selected a conservative resilient modulus of 6,000 pounds per square inch (psi).

Based on our explorations and evaluation of past site history, the proposed alignment of Agnes Avenue is appropriate for the development of the City street. The subgrade soils will require recompaction in accordance with City requirements as preparation for final subgrade grades.

## 5.10 Agnes Extension

The Agnes Extension portion of the project consists of extending a ¾ width roadway from the west end of Agnes Avenue to the east. The roadway will cross the old Rossman Landfill.

The Rossman Landfill has been extensively studied and consisted of a municipal solid waste (MSW) landfill that was open until 1969. The MSW was placed in unlined trenches and pits. Compaction of the waste and daily cover were no typical. The cells of the landfill were subsequently capped with on-site silts and sands.

An exploration program completed by AGRA Earth and Environmental in 1998 included five borings and four test pits within or near the proposed Agnes Extension footprint. In general, the explorations encountered 6 to 15 feet of surface fill (gravels, sands, and silts) overlying 5 to 13 feet of MSW.

Ideally, roadways would not be developed over MSW landfills but the nature of this site results in a requirement for an emergency outlet at the north end. The original Agnes Avenue was developed over the Rossman Landfill and ultimately had to be closed when differential settlement made the roadway undriveable. However, the total depth of removal and complications associated with landfill removal and relocation preclude excavating and removing the existing landfill material.

The failed Agnes Avenue was constructed directly over the landfill with no preparation. Further, the amount of MSW under the original Agnes was closer to 20 feet and the landfill was recently closed. Settlements during the initial 10 to 20 years after closure are much higher than the long-term settlement after that time.

Based on our research, we recommend that the roadway area be preloaded in order to reduce the total amount of settlement that will occur post construction. Surcharging landfills is a common approach to developing roadways and was applied over the portions of Rossman Landfill located east of the 205 freeway.

The long-term settlement after surcharging can be approximated by consolidation theory. Published guidance indicates that the compression index (C'c) for mature solid waste ranges up to 0.22 and the mean secondary compression coefficient (Cα) for mature landfill waste is 0.05 strain/log time. Based on this value, we evaluated the time rate of settlement associated with ongoing collapse of the waste as well as the addition of the roadway section and roadway fill. We also evaluated the level of consolidation that would occur under surcharge loads of varying heights.

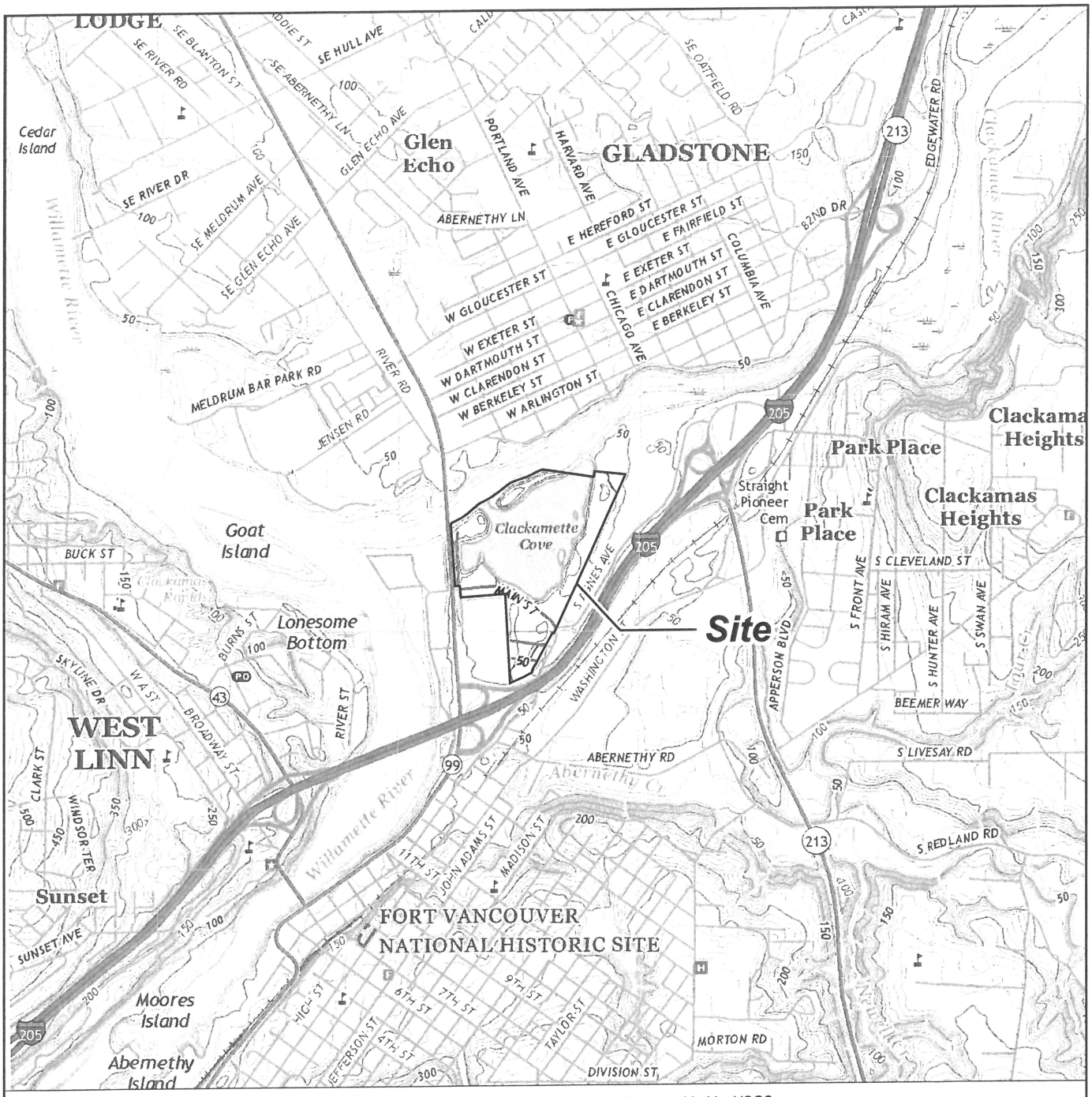
With a net four foot fill over the roadway (approximately) our analysis indicates that the MSW compression would approach four inches with a further four inches of settlement occurring over the next 20 years. In order to accelerate the long-term settlements, we propose placing a surcharge fill over the roadway above and beyond the net fill for the roadway. Based on published values, and attempting to limit long-term settlements to one inch, our analysis indicates that a 20-foot surcharge, left in place for approximately 90 days would reduce the long-term settlement to less than an inch.

## 6.0 Recommendations for Additional Services

We have prepared recommendations relative to the overall site work and development of this site. As specific building plans are developed, we recommend significant geotechnical involvement in the subsequent planning and design of those structures.

## 7.0 Closing

This report presented Apex's geotechnical engineering evaluation and recommendations for the proposed project. Subject to the recommendations provided within this report, construction of the proposed project is feasible from a geotechnical standpoint. We trust that this report meets your needs. If you have any questions, or if we can be of further assistance, please call. We look forward to working with you in the future.




**Note:** Base map prepared from USGS 7.5-minute quadrangle of Oregon City, OR, dated 2017 as provided by USGS.gov.

0 2,000 4,000

Approximate Scale in Feet

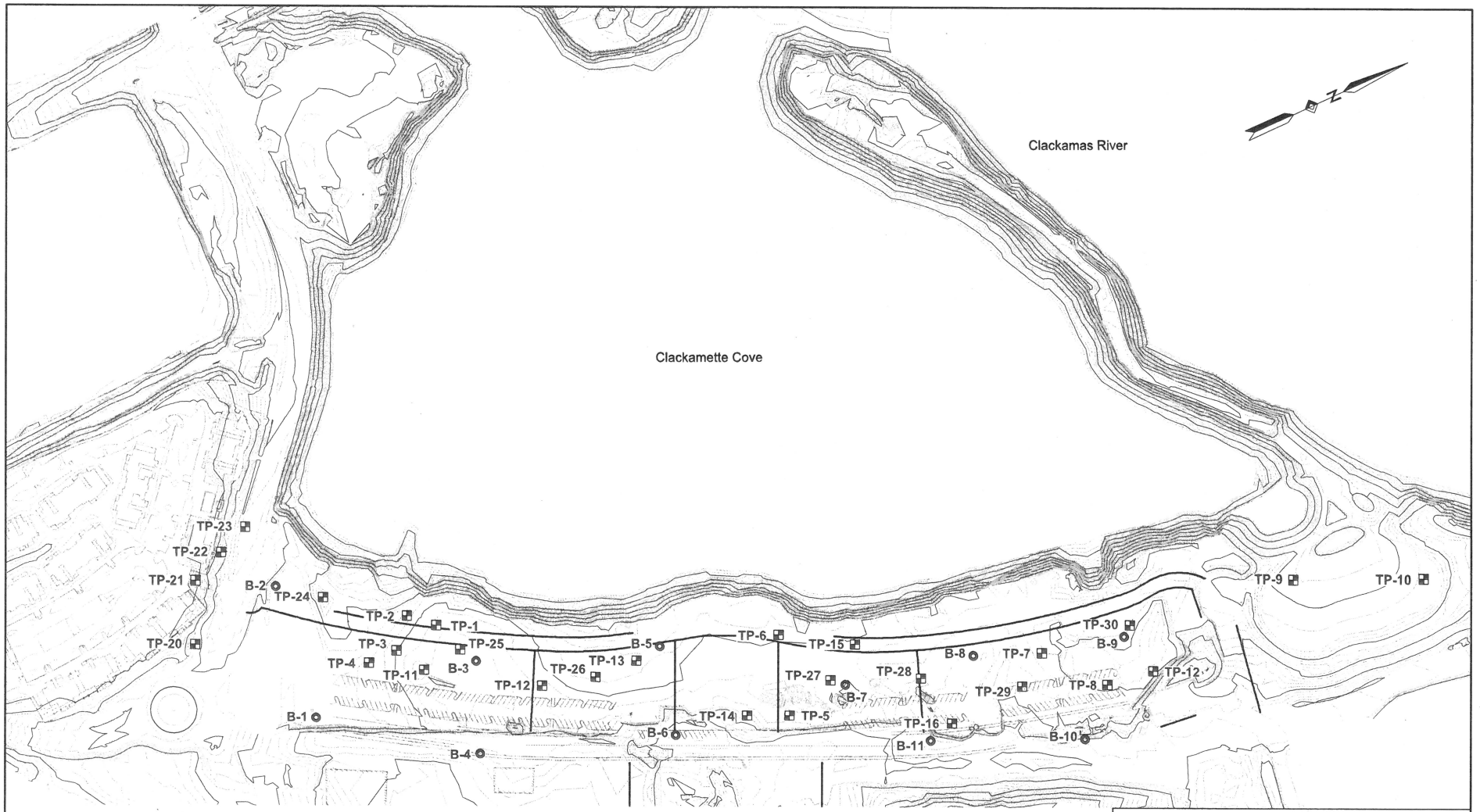



N

# Site Location Map

Clackamette Cove
Proposed Cove Waterfront Development
Oregon City, Oregon

| | | | |
|---|---|---|---|
| APEX Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201 | Project Number | 2367-00 | Figure 1 |
| | September 2017 | | |




***Legend:***

TP-1 Test Pit Location

B-1 Boring Location

***NOTE:*** Base map prepared from X-site 2017-08-08 bound.dwg (2017).

## Site Vicinity Plan

Clackamette Cove
Proposed Cove Waterfront Development
Oregon City, Oregon

| | | | |
|---|---|---|---|
| APEX Apex Companies, LLC 3015 SW First Avenue Portland, Oregon 97201 | Project Number | 2367-00 | Figure 2 |
| | | September 2017 | |